Guidelines for San Leandro Bay

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Port of Oakland
Board of Port Commissioners
City of Oakland
Oakland, California 94607

May 15, 1972

On behalf of the CITIZENS ADVISORY GROUP ON SAN LEANDRO BAY PLANNING we submit our report "Guidelines for San Leandro Bay". We believe that you will find it a comprehensive and useful document.

The dedication and effort of members of the group has been inspirational; the amount of information which is compiled in these pages is immense; and the co-operation in identifying and then achieving our goals has been outstanding. Each goal and recommendation, has received unanimous or near unanimous approval. The entire report represents a consensus of the Advisory Group.

The guidelines are directed toward preserving San Leandro Bay as a major natural resource and toward planning and improving it for Public enjoyment and regulated use. Our "Goals and Recommendations" set forth specific ideas which we believe to be critical.

In addition to these primary purposes you will find that the report gathers together a great amount of relevant background information that should be useful in making future planning and use decisions.

The report's illustrative maps show an extensive marsh between San Leandro Creek and Airport Channel. This marsh was a viable and important wildlife habitat when the Advisory Group was formed last year. Today it no longer exists. Irreplaceable resources can disappear more rapidly than they can be studied. The San Leandro Bay Planning Area can be lost unless action to implement this report is taken soon. We urge careful study of the section on implementation, early adoption of the report and preparation of and committment to a time schedule for action.

A requirement for successful implementation will be cooperative action by not only the Port of Oakland but by other agencies and private property owners. We urge that copies of this report be distributed to these agencies and individuals, and to other interested organizations, and that their active interest and support be sought.

We thank you for the opportunity we have had to participate in this important study. As you proceed with your plans for implementation, we pledge our continued support and assistance in any way possible.

Respectfully yours,

Burns Cadwalader

Lawrence Joyner

Co-Chairmen

CITIZENS ADVISORY GROUP ON SAN LEANDRO BAY


PACIFIC RESOURCES INCORPORATED
Aerial Photographic Division

GUIDELINES FOR SAN LEANDRO BAY

REPORT of

ADVISORY GROUP ON SAN LEANDRO BAY PLANNING

to

BOARD OF PORT COMMISSIONERS

OAKLAND, CALIFORNIA

May 1972

Cover: Egret and Marshes, San Leandro Bay

Frontispiece: Aerial View of San Leandro Bay and Surrounding Area

T A B L E O F C O N T E N T S

ADVISORY GROUP ON SAN LEANDRO BAY PLANNING

Name	Organization Represented
Mrs. Sue Abbott	Junior League of Oakland, Inc.
Mr. Nat Arnold	California Chapter of American Society of Certified Engineering Technicians
Mr. Bruce Aspinall	Alameda City Planning Department
Mr. Robert Beritzhoff	Oakland Chamber of Commerce
Mr. Ed Bertinuson	Pacific Gas and Electric Company
Mr. Stephen Blitch	Port of Oakland
Mr. Bill Bostwick	Oakland Redevelopment Agency
Mr. Jeff Bottger	San Leandro Bay Committee, Alameda County Bay Watchers
Mr. Charles Boyd	Port of Oakland
Mr. Harry Bruno	Architect
Mr. Burns Cadwalader	Architect
Mr. Bill Campbell	Oakland Model Cities
Mr. John Christensen	Oakland Chamber of Commerce
Mr. Brian Coughlan	East Bay Chapter American Institute of Architects
Mr. Paul Covel	City of Oakland Park Naturalist
Mr. Lewis Crutcher (or Mr. Hulet Hornbeck)	East Bay Regional Park District
Mr. Richard Dixon (or Mr. Ralph Heins)	East Bay Bicycle Coalition
Mr. Roger Durst	Oakland Design Group
Mr. John English	Oakland City Planning Department
Mr. Richard Forester	California Department of Fish and Game
Mr. Bradley Garretson	Oakland Chamber of Commerce
Mr. John Glover	Port of Oakland
Mr. Jacob Harari	U. S. Army Corps of Engineers
Mr. Frank Hennessy	Port of Oakland
Mrs. Lorna Jones (or Mr. Jordan Hall)	Oakland Citizens Committee for Urban Renewal (OCCUR), Urban Design Committee
Mr. Leroy Jorgensen	East Bay Municipal Utility District
Mr. Lawrence Joyner	East Oakland Fruitvale Planning Council
Mr. Al Lee	Oakland Street and Engineering Department
Mr. Malcolm Leiser	Sierra Club
Mr. Jack Lindley (or Mr. Richard Dombrink)	Alameda County Flood Control and Water Conservation District
Mr. Irwin Luckman	People for Open Space
Miss Helen MacGregor	North Oakland Planning Council
Miss Charlotte Mauk	Regional Parks Association
Mr. Jean Meuris	California Society of Professional Engineers
Dr. R. M. Minnich (or Mr. Fred Hallett)	California Speedboat Association

Mr. Marc Monaghan	Ecology Center
Mr. Daniel Murphy	Regional Water Quality Control Board
Mrs. Elsie Roemer	Golden Gate Audubon Society
Mrs. Kathleen Schaub (or Mr. George Reilly)	U. S. Army Corps of Engineers
Mrs. Charnee Smith	League of Women Voters of Oakland
Mrs. Barbara Stone	Save San Francisco Bay Association
Mr. Clinton Thompson	Seaplane Association
Mr. William Travis (or Mr. Alan Pendleton)	S. F. Bay Conservation and Development Commission
Mr. Roger Voorhees	Architect
Dr. M. P. Wennekens	U. S. Army Corps of Engineers
Mr. Ed Wilkinson	City of Oakland Architecture Services Division
Mr. Clarence Wilson	Associated Sportsmen

GROUPS INTERESTED IN SAN LEANDRO BAY

Aeolian Yacht Club - 200 members
American Institute of Architects, East Bay Chapter - 300 members, including 250 "corporate members"
American Society of Certified Engineering Technicians
American Society of Landscape Architects, Northern California Chapter - 125 members
Bay Area Audubon Council - representatives of 9 chapters, including 7,000 members

Associated Sportsmen - 22,000 members in Bay area
Berkeley Wheelmen - about 70 members
California Society of Professional Engineers, East Bay Chapter - approximately 155 members
California Speed Boat Association - 300 members (1,000 on mailing list at individuals' request)
East Bay Bicycle Coalition - recently organized by "50 hard-core, spark-plug bike enthusiasts;" growing rapidly

East Oakland - Fruitvale Planning Council - 120 members of a board representing 60 groups with membership varying from 20 to 120
Ecology Center - 300 members
Golden Gate Audubon Society - 3,000 members (over 4,000 including members of families)
Grizzly Pedal Pushers - approximately 350 members
Junior League of Oakland, Inc. - 630 members

Lake Merritt Rowing Club - 100 members
North Oakland District Council - 50 members
Oakland Airport Center, Inc. - about 90 members
Oakland Chamber of Commerce - 3,300 members
Oakland Citizens Concerned with Urban Renewal - 300 on mailing list

Oakland Kiwanis Club - about 160 members (possibly other Kiwanis groups also)
People for Open Space (Bay Area) - 900 on mailing list
Regional Parks Association - 275 on mailing list
Save San Francisco Bay Association - 20,000 members
Sierra Club, San Francisco Bay Chapter - 28,000 members
University of California Varsity Crew - about 150 members

I. INTRODUCTION

"Major Park or Recreation Area" is the current designation in the Oakland General Plan of a continuous band around the Oakland portion of San Leandro Bay. "Recreation - Open Space" is the term for the same area in the Port of Oakland Shoreline Plan. Arrowhead Marsh, jutting into the center of the Bay, is entirely shown in this way. "...Valuable wildlife habitat, great recreation potential" is the designation of the Bay Conservation and Development Commission (BCDC).

Environmental considerations in plans for this section of Port of Oakland property have been the subject of study since early in 1970, when the Port's Environmental Planning Division was established. Discussion meetings of the Port's planning staff, beginning in November 1970, were attended by representatives from several government agencies interested in San Leandro Bay. Professionals in park planning, oceanography, landscape architecture, city planning, and wildlife conservation participated in these discussions.

A tour of San Leandro Bay in June 1971 was followed by the organization of the Advisory Group on San Leandro Bay Planning.

Representatives of 17 community organizations and 12 government agencies interested in San Leandro Bay met on July 15, 1971. Committees were formed to explore (1) Physical Environment; (2) Land Use; and (3) Financial Resources.

These committees have met independently and have arranged many field trips to acquaint members with the San Leandro Bay and its environs, both at low tide and at high tide. Expertise of committee members has been supplemented by information supplied by specialists in particular fields. The Port staff has given whole-hearted and greatly appreciated support.

The committees have reported to the Advisory Group, which was officially recognized by the Board of Port Commissioners at a meeting on November 10, 1971. In a resolution passed at this meeting the Advisory Group was asked to develop proposals for use of the water area of San Leandro Bay and the 100-foot shoreline band (excluding Alameda and East Bay Municipal Utility District property) designated as the "San Leandro Bay Planning Area." (See Apprendix A. BOARD OF PORT COMMISSIONERS' RESOLUTION 20659.)

This report endeavors to set forth guidelines by which the San Leandro Bay Planning Area and some contiguous lands can be preserved, planned for, and improved for public enjoyment and regulated use both now and in the future.

II. S U M M A R Y

Historical Background

Only a half century ago, San Leandro Bay looked far different from today's scene. The water area was deeper, and there were much more extensive marshes. The decades since have brought major change, with development of the Airport, the Industrial Park, and other projects. (See pages 7, 8.)

General Description

San Leandro Bay is still, however, a unique and attractive open space in the heart of the East Bay metropolitan area.

Unfortunately, enjoyment of it is now sharply limited by its inaccessibility. Nearby parking is scarce and bus service inconvenient. Furthermore, most of the surrounding land uses benefit little from the Bay's proximity. Except on Alameda's residential east shore, these are mostly areas given to industrial and airport uses, interspersed with large tracts of vacant land.

Most of the water area is very shallow, becoming exposed mudflats at low tide. At places siltation is a problem. Several studies indicate that the Bay is heavily polluted--especially the bottom sediments, which could pose a serious problem for dredging here. (See pages 9-13.)

Ownership and Jurisdiction

The great majority of the shoreline is owned by public agencies: the Port of Oakland, the City of Alameda, and the East Bay Municipal Utility District. The Port has planning and control jurisdiction over the entire Oakland section except EBMUD property. Many other public agencies are also involved in some manner. Those with major regulatory jurisdiction are the U. S. Army Corps of Engineers, the Bay Conservation and Development Commission (BCDC), the Alameda County Flood Control and Water Conservation District, and the California Department of Fish and Game. (See pages 15-18.)

Current Plans and Proposals

The Oakland General Plan shows a "major park or recreation area" around the Bay's entire Oakland shoreline. Alameda, in its Comprehensive General Plan, indicates future recreational use on nearly all of its shoreline. BCDC's Bay Plan emphasizes the area's recreational potential. Several major projects around San Leandro Bay are now under way, pending, or under study. Among these are the City's Bay Park Refuge adjacent to the Municipal Service Center, the Port's distribution center between San Leandro Creek and Doolittle Drive, and an impending flood-control project on San Leandro Creek. (See pages 19-22.)

Mudflats and Marshes

The mudflats are rich with many forms of aquatic life and provide feeding ground for numerous shorebirds. Mud algae produce oxygen that helps abate pollution. Only about 60 acres of marsh are left at San Leandro Bay, but the remnants are of great ecological significance. (See pages 23-26.)

Fish and Fishing

Many varieties of fish and shellfish are in the Bay, and fishermen are frequently seen despite the lack of facilities for them. Fishing, however, has suffered from such factors as water pollution and loss of vital spawning grounds in former marshes. (See pages 27, 28.)

Bird Life

The San Leandro Bay area, an important stop on the Pacific Flyway, is widely known among birdwatchers and ornithologists. It has attracted great numbers of birds, of many species, because it has met their varied needs for (1) feeding grounds (tidal mudflats, marshes, or water of different depths); (2) resting places (marshes, shallow water, or dry land); and (3) nesting sites. Among the vital areas that serve these needs are Arrowhead Marsh, the diked area on Doolittle Drive just east of the Alameda dump, the marsh at Damon Slough, and the mudflats themselves. (See pages 29-32.)

Public Uses

Present public uses, although some are unrecognized officially, are remarkably varied. Popular activities include power boating and water skiing (on Airport Channel); wildlife-viewing tours, birdwatching, and photography; fishing and clamdigging; and model airplane flying and mini-bike riding (near Doolittle Drive in Alameda).

The potential for increased public use is very great. There are unusual opportunities for nature education, for birdwatching and photography, and simply for quiet viewing and contemplation. Bicycling, walking, and jogging are ideally suited to the area. San Leandro Bay could become the hub for bicycle routes radiating throughout Oakland, Alameda, and San Leandro. Other active dry-land sports might be appropriate in places.

Boating is hampered by shallow water. Other possible problems include noise (from speedboats) and water pollution. Birds and boats seem to get on reasonably well at present levels of use. Crew racing could be a popular activity but would require a very long, straight channel 500 feet wide; dredging for it might be a major problem. (See pages 33-36.)

Goals and Recommendations

Goals. The following goals should be pursued:

1. To retain the unique value to man of a major water-oriented open space in the heart of an urban area.

2. To preserve, maintain, and expand if possible the distinctive wildlife habitat, so that (a) the total natural life cycle can be preserved, especially with respect to endangered species; (b) the potential educational and leisure-time benefits can be maximized; and (c) safety of both aircraft and birds at the nearby airports can be assured.

3. To encourage the use and enjoyment of the Bay by man to an extent that is consistent with goals 1 and 2.

General Land and Water Use Guidelines. San Leandro Bay is large and varied enough to accommodate a great range of activities if properly planned. The entire San Leandro Bay and its shoreline should be considered as a single planning unit. All undeveloped areas within the 100-foot band of BCDC jurisdiction should be maintained primarily for park, open-space, or refuge purposes. Man should be restricted from areas where his presence would harmfully disturb the wildlife.

General Recommendations for the "San Leandro Bay Planning Area." Mudflats, marshes, and high-tide resting sites used by birds should be preserved and protected, and marshes and resting sites should be expanded wherever possible. Facilities for nature education should be provided, such as a nature center and observation stations. Facilities for fishing should be provided, although elaborate structures are not needed.

Dredging should be limited to that needed for flood-control or other approved, planned purposes which would not have long-lasting adverse effects on the aquatic environment. The use of San Leandro Bay for landing and take-off of seaplanes should not be permitted unless it can be demonstrated that such use would not be in conflict with the above goals and guidelines. No roads, bridges, or other structures should be built across the main body of San Leandro Bay or Arrowhead Marsh. Filling should be limited to that consistent with the above Goals and Guidelines.

Only those activities should be permitted which are consistent with the Goals and Guidelines. Many forms of outdoor activity can be pursued without conflict if adequate facilities and surroundings are provided. Some activities, perhaps acceptable now, may have to be phased out as public use increases.

Shoreline accessibility should be improved. However, use of the Planning Area itself for motor vehicles and parking should be minimized. Continuous bicycle and pedestrian trails around the Bay should be developed.

Additional public transportation should be provided to major access points in the Planning Area. All new elements, including buildings and plantings, should be designed to be compatible with the above Goals and Guidelines. Aesthetic values should be enhanced through such measures as removing debris and rubble and prohibiting billboards. All utility lines should be placed underground.

Recommendations for Property Outside the "Planning Area." Additional land outside the Planning Area should be considered for inclusion in a San Leandro Bay park. At least the following should be considered: the EBMUD land west of the railroad spur, PG&E and other private property on the point of land above the Tidal Canal, private land in Alameda near the Aeolian Yacht Club, the Alameda dump, several areas along Doolittle Drive in Oakland, and portions of the former marsh area between Doolittle Drive and San Leandro Creek.

Any extension of Edgewater Drive should be routed as far as possible from the existing shoreline, so as to preserve and protect Damon Marsh. The 66th Avenue freeway interchange area and the Coliseum Complex connection should be improved as an entry to the San Leandro Bay park. Safe shoreline access should be provided along the Doolittle Drive area. Any BART-Oakland airport extension or connector line adjacent to the Planning Area should conform to the Goals and Guidelines stated earlier. Utility lines should be placed underground in the general vicinity of San Leandro Bay.

Special recommendations. The benefits to the public from recreational use and wildlife protection should be assured permanence by whatever legal and governmental steps are necessary. The Advisory Group on San Leandro Bay Planning, or its successor, should convene periodically (at least annually) to review the implementation of this report. (See pages 37-42.)

Implementation

There are many possible sources for financing a San Leandro Bay park. What may be called for is an implementation "package" involving several different programs and agencies. Initial contacts between affected agencies have already begun. These should be followed through to decision-making, detailed planning, and financial arrangements. Also, service clubs, business groups, and community organizations could be very helpful in public information and fund raising.

Park development may have to be phased over a number of years, but interim improvements should begin immediately. (See pages 43-45.)

III. HISTORICAL BACKGROUND

Original Ownership

When California became a state, San Leandro Bay was a portion of Rancho San Antonio. In an 1852 court decision (Toler versus Peralta) the property was divided along the so-called "Brothers' Line". The holdings changed hands through various individual private owners, and some land was transferred to the City of Oakland by the State Tidelands Grants of 1911.

Different Appearance

The amount of marsh in existence 55 years ago is indicated in Plate 1, which was drawn in 1917. The San Leandro Bay of today looks far different from the San Leandro Bay of that year. Deep-water areas were surrounded by extensive marshes. Deep water was deeper, and boats for some years afterwards went regularly up San Leandro Creek as far as what became Hegenberger Road. A channel, no longer visible, extended toward the south to empty into San Francisco Bay. Plate 1 shows what looks like two Arrowhead Marshes. Fill for the original airport came from the San Leandro Bay area.

Public Acquisition

In 1925 fee acquisition of title to lands in San Leandro Bay was begun. The importance of the area was accentuated when Oakland began to prepare for participation in the new air commerce industry. After a careful survey, property at the Oakland end of Bay Farm Island (a peninsula rather than an island) was purchased in November 1926 and placed under the jurisdiction of the newly established Port Commission in February 1927.

Oakland Airport Established

Oakland Airport quickly came into national prominence. U. S. Army plans for the first trans-Pacific flight were announced on June 18, 1927. Hegenberger Road and Maitland Drive are reminders of the success of that first flight, made by Lieutenant Lester J. Maitland and Lieutenant Albert F. Hegenberger.

Airport Access Through San Leandro Bay

Road access to the new Oakland Airport was through Bay Farm Island along County Road and what became Maitland Drive, or by way of 98th Avenue,

then far out in East Oakland. Mail contracts were important to the new industry, and fast delivery of mail to the Airport from downtown Oakland was planned by way of the Oakland Estuary, the Tidal Canal (dredging completed in 1903), across San Leandro Bay, and along Airport Channel. Dredging of Airport Channel was completed in 1928; material dredged from a marshy area went into the making of Doolittle Drive. The mail route along Airport Channel was abandoned as new access roads were built. Nimitz Freeway, which also involved filling of marshlands, speeded up access enormously.

Deep-Water Harbor Envisioned

The channelization of San Leandro Creek, which had meandered through the marsh to empty into Airport Channel, was accomplished in 1948. At that time the Port Commission was thinking of San Leandro Bay in terms of a deep-water harbor. A rectangular deep-water section off the City Service Center, designed for a ship-docking area, is visible today in aerial photographs. (See Plates 2 and 3.)

Industrial Park

All property now owned by the Port in the San Leandro Bay area was acquired by 1955, when the last purchase was made in the Industrial Park. In 1964 a 127-acre parcel was relinquished to the Oakland City Council. This land was traded to the East Bay Municipal Utility District (EBMUD) for the Coliseum site, now owned by the City of Oakland.

Properties Not in Port Hands

San Leandro Bay shoreline properties, other than those held by the Port, include certain residences along the Alameda shoreline, a large vacant tract on the Alameda east shore, the Alameda dump, EBMUD property, Pacific Gas and Electric Company (PG&E) property, and a number of industrial holdings extending from Tidewater Street to the Tidal Canal.

IV. GENERAL DESCRIPTION

Open Space

San Leandro Bay is a unique and attractive open space in the heart of the East Bay metropolitan area. It is close to both employment and recreation centers.

Despite general inaccessibility of the shoreline, the far vistas from Doolittle Drive and from special points in Oakland's Industrial Park and along the east shore of Alameda give pleasure to those who enjoy open country. The pleasing architecture and landscaping of the Industrial Park contribute to the feeling of spaciousness. The view of the architecturally distinguished Coliseum with the open area around it broadens the perspective and leads the eye to the Oakland Hills. On a clear night the lights of the East Oakland Hills, highlighted by the glow of the Oakland Temple of the Latter Day Saints, give a spectacular view.

Water Area

More than two-thirds of the high-tide water area of approximately 600 acres belongs to the Port of Oakland. Most of the rest covers submerged lands along the Alameda east shore and the PG&E and EBMUD properties along Oakport Road. (Plate 4.) All the high-tide water area is under Bay Conservation and Development Commission jurisdiction; this includes Arrowhead Marsh. The water area is designated as a Wildlife Refuge by the California Department of Fish and Game.

At low tide, when extensive mudflats are exposed, open water is reduced to channels comprising about 100 acres. Boat access to these channels is chiefly from the tidal canal generally known as the Oakland Estuary. A small boat, however, may occasionally enter San Leandro Bay from San Francisco Bay under the Bay Farm Island Bridge. Attempting to navigate in San Leandro Bay on a receding tide, however, may lead to adventures on the mudflats. (Plate 3.)

Depth of Water; Dredged Areas

Deepest parts of San Leandro Bay are the Tidal Canal, Airport Channel, and the rectangular area just off the site of the Municipal Service Center. All are dredged areas. (Plate 2.)

Alameda was made an island in 1903, when the man-made extension of the Oakland Estuary was completed to form a tidal canal leading into San Leandro Bay. Airport Channel was dredged in 1928 in connection with the acquisition of property for the Oakland Airport. The rectangular area was dredged as part of the San Leandro Creek project. (See Chapter III, HISTORICAL BACKGROUND.)

Shoreline

The shoreline of San Leandro Bay, including a little more than three miles along flood-control channels (East Slough, Damon and Elmhurst Channels, and San Leandro Creek) totals about nine and a half miles. About a mile and a half of this is in Alameda, and not quite a mile is along EBMUD property. A 100-foot shoreline band immediately adjacent to the Bay is under BCDC jurisdiction. From East Slough to the High Street Bridge crossing from Oakland into Alameda, private industry occupies almost all the shoreline. Pacific Gas and Electric Company has extensive holdings near the East Slough end of Tidewater Street. A large vacant lot, now being developed by Navajo Terminals, Inc., attracts fishermen to the east side of the Tidal Canal.

Filled Areas

Almost the entire shoreline of San Leandro Bay is filled land. Only exceptions are Arrowhead Marsh, Damon Marsh, and small section of marsh along Airport Channel.

Land Use

Except on the Alameda east shore, little of the land surrounding San Leandro Bay benefits people or water-oriented industry. Land in use is largely given to general industry and to concerns associated with the Airport. Large tracts of vacant land are interspersed throughout the area.

Areas Undergoing Change

Aerial photographs show heavy siltation offshore from the Alameda dump. Marshes develop when the water attains a certain shallowness; hence the small strips of marsh along the east shore of Alameda and along East Slough indicate siltation in those areas. (Plates 3 and 6.)

The most radical change now going on is the filling, by the Port of Oakland, of the marsh between San Leandro Creek and Airport Channel. What was an unexcelled wildlife area has become, in less than a year, largely solid fill.

Water Pollution

Although detailed research is needed, several studies indicate that San Leandro Bay is heavily polluted. (See Appendix D, WATER POLLUTION.) In June 1971 the Environmental Protection Agency (EPA) tested samples of sediment from San Leandro Creek. According to the Environmental Impact Statement issued by the U. S. Army Corps of Engineers in connection with

the San Leandro Creek flood-control project, these sediments were considered to far exceed EPA criteria in volatile solids, nitrogen, mercury, lead, and zinc and were thus unacceptable for open-water disposal.

A State Health Department study of shellfish in 1967 showed pollution beyond standards set for human consumption of shellfish.

In 1971 a college student who for several years had been exploring aquatic life in San Francisco Bay mudflats gathered specimens from San Leandro Bay. She found that aquatic animals had died out in various places; in some there were signs of regeneration. Airport Channel was one of the richest sources of life in the mudflats; however, there were signs of heavy oil pollution. She concluded that a large majority of native species have been replaced by hardier nonnative species.

On the Coliseum side of the Bay, sanitary sewers may overflow storm sewers at high tide during periods of heavy storm runoff.

Movement of birds is considered to be one clue to pollution. Where birds do not feed in the marshes and mudflats, the inference is that food is missing.

Noise Pollution

Sources of high decibel ratings around San Leandro Bay are boat racing, freeway traffic (especially big trucks), airplanes (particularly helicopters), and construction equipment. All are intermittent, rather than continuous. (See Appendix E, NOISE POLLUTION.)

Plant Life

Because of the extensive fill along the shoreline of San Leandro Bay, native plants usually seen in estuarine habitats are sparse. (See Chapter VII, MUDFLATS AND MARSHES.) In filled areas, plants not commonly found near the shoreline have grown and are encouraging such birds as mourning doves, starlings, finches, and certain sparrows. The most varied stand of such plants is on EBMUD property.

Bird Life

A distinctive feature of San Leandro Bay is the presence, except from late April to the middle of June, of many varieties of shoreland water birds. These birds migrate twice a year along the Pacific Flyway. (See Chapter IX, BIRD LIFE.)

Access to Shoreline

Enjoyment of San Leandro Bay is now sharply limited by its inaccessibility. In the northeast sector, where there is still open land along the shore, approach is cut off by private property. Use of the Alameda east shore is minimal (except in the large open tract toward the Bay Farm Island Bridge, where youngsters play happily) because homeowners have effectively cut off access to tidal flats. The Alameda dump is an ever-higher obstacle in the way of the shoreline. Lands owned by PG&E and EBMUD are cut off from public use.

Almost the only clear view of San Leandro Bay is from Doolittle Drive and from a few open places in Oakland Industrial Park. Fishermen and birdwatchers, who have long walked along San Leandro Creek to the edge of Arrowhead Marsh, are hopeful that recently posted "No Trespassing" signs are only temporary during construction activities.

Parking

Auto access to the San Leandro Bay area is limited by lack of parking. Street parking is prohibited in the Industrial Park because of a lease agreement with tenants, who have been encouraged to provide their own parking lots so as to retain the open-space, parklike character of the development.

The Municipal Service Center parking lot will be available, in part, for users of the new San Leandro Bay Park Refuge. About 35 stalls will be designated for users of the park during the week. Additional space not occupied by City vehicles will be available weekends.

Persons who walk along San Leandro Creek to Arrowhead Marsh sometimes park in unpaved space along the creek near Hegenberger Road. A restaurant parking lot has been used for entrance to Erstwhile Marsh from Pardee Street.

Limited parking at the edge of Doolittle Drive is used by fishermen and birdwatchers, and paid parking is available along Airport Channel for persons who watch powerboat races.

At the east end of Alameda, street parking can be used near the few streets that provide a chance to view the Bay. Makeshift parking along Oakport Road between East Slough and Damon Creek is used for access to the shores of the two channels (and to events at the Coliseum-Arena). Winter storms, however, can make this parking precarious.

Bus Service

The Airport bus that runs along Hegenberger Road is routed along Edgewater Drive in the early morning and late afternoon to give "extended

service" to people who work in the Industrial Park. Similar service is provided along Earhart Road for Airport workers. Neither route goes to the shore of San Leandro Bay. Service to Bay Farm Island is provided from within Alameda, and from Oakland across the High Street Bridge and through Alameda to Otis Drive and then over Bay Farm Island Bridge. During football season many buses run along Doolittle Drive from Alameda to the Coliseum, but there are no stops en route.

V. OWNERSHIP AND JURISDICTION

Two Cities Involved

Lands bordering San Leandro Bay are within the borders of two cities, Oakland and Alameda. Alameda land extends from the Bay Farm Island Bridge to the High Street Bridge and along Doolittle Drive to the border of the golf course and the end of the Alameda dump. Private residences occupy much of the east shore of Alameda, but a large vacant tract zoned residential is at the end of the east shore toward the bridge.

Within the borders of Oakland the Port of Oakland owns all shoreline property from the Alameda boundary around the Bay to Damon Channel. EBMUD land extends to East Slough, where PG&E property lies along the Slough. Privately owned industrial holdings stretch from PG&E land to the High Street Bridge. (Plate 5.)

The Port of Oakland has planning jurisdiction over all land in Oakland bordering San Leandro Bay except EBMUD property. This jurisdiction includes the industrial property between East Slough and the High Street Bridge.

U. S. Army Corps of Engineers

The San Francisco District of the Corps, one of 37 districts in 11 divisions, has several kinds of regulatory jurisdiction over San Leandro Bay.

Protection and preservation of navigable waters is a major responsibility. The Tidal Canal was excavated to improve navigation in the natural estuary of San Antonio Creek, which drained an area of 4 square miles and deposited sediment in the Oakland Estuary. A land-cut canal 1.4 miles long and 275 feet wide was excavated to connect Brooklyn Basin with San Leandro Bay. Construction of Park Street, Fruitvale, and High Street bridges was part of the project. Dredging for maintenance and deepening of the channel was carried out under provisions of River and Harbor Acts of 1910, 1922, and 1927.

Work authorized in 1962 on deepening the Tidal Canal east of Park Street is pending. New railroad and highway bridges at Fruitvale Avenue are in the process of replacement. Bicycle paths are part of the planning.

Permits for discharge of industrial wastes are a responsibility of the Corps. (These do not include discharges from a public treatment system, storm water runoff from streets, deposits into a waste-treatment system, deposits on banks of a waterway or its tributary except where slope would permit flow into the water, or deposits from ships.) There is currently a moratorium on the issuance of such permits. Applications

are on file for Shell Oil and Humble Oil facilities at the Oakland Airport and for the Shell Oil Distribution and Owens-Illinois plants discharging into the Tidal Canal.

Filling of marsh land. In Public Notice No. 71-22a, dated 18 January 1972, the U. S. Army Corps of Engineers, S. F. District, stated that permits will be required for all new work in unfilled portions of the interior of diked areas below former mean higher high water. The Oakland Scavenger Company was advised that it must refrain from filling the area recently diked on Doolittle Drive adjacent to the Alameda Dump and must post signs to prevent others from dumping there.

Flood control is a province of the Army Corps of Engineers. In the San Leandro Bay area the Alameda County Flood Control and Water Conservation District has jurisdiction. In response to a request from ACFC&WCD, dredging of San Leandro Creek is a current project of the Corps. The required Environmental Impact Statement is now in the hands of the Council on Environmental Quality.

Bay Conservation and Development Commission

The Bay Conservation and Development Commission, established by the State Legislature under the McAteer-Petris Act of 1965, has jurisdiction over the open waters of San Leandro Bay, Arrowhead Marsh, and a shoreline band 100 feet shoreward of the height of mean higher high water. Any plan for change in the floor of San Leandro Bay or along the 100-foot shoreline strip requires approval by BCDC.

The Port of Oakland claims exemption from BCDC jurisdiction in one section; such exemption would permit the Port to place additional fill on the area across Damon Channel north of the Service Center site to the boundary of EBMUD property. BCDC does not agree that such a claim is valid. Settlement of jurisdiction in this area is pending.

The Joint Declaration between BCDC and the Port of Oakland, approved by BCDC on February 4, 1971, qualified the 100-foot band around the marsh between San Leandro Creek and Airport Channel as follows: "...the Port and BCDC agree that a uniform band of public access, whatever its width, may be less desirable and less in the public interest than a narrower band in some areas coupled with major access points in certain parts; for example, access to the waters of the southernmost part of the narrow San Leandro Channel is less attractive than access to the more open waters of San Leandro Bay."

In exercising jurisdiction BCDC follows two general objectives: (1) to protect the Bay as a great natural resource for the benefit of present and future generations; (2) to develop the Bay and its shoreline to their highest potential with a minimum of Bay filling.

Alameda County Flood Control and Water Conservation District

Zone No. 12 of the ACFC&WCD includes the cities of Oakland and Emeryville. The City of Oakland requested the formation of the Flood Control zone following the damaging floods of October 12, 1962. In early January of 1963 the zone was formed by resolution of the county Board of Supervisors to provide flood protection for the cities involved. Proposed project improvements were approved by the Board of Supervisors in May of that year.

Work on the tributary creeks to San Leandro Bay (San Leandro Creek, Elmhurst Creek, Damon Slough, and East Creek Slough) and the necessary dredging of outlet channels through San Leandro Bay are a portion of the planned projects for Zone No. 12, along with maintenance of the constructed facilities. In addition to implementing the planned channel improvements, the Flood Control District also reviews developments adjacent to the creek which are submitted to it by the City. The District also requires connection permits for any development that utilizes a flood-control-improved facility.

California Department of Fish and Game

Refuge Status of San Leandro Bay. By action of the State Legislature in 1931 San Leandro Bay and surrounding marshes were established as a wildlife refuge. No hunting is allowed, and special efforts are made to protect wildlife and its natural habitat. Endangered species are of particular interest.

Many state laws protecting fish and game are enforced by the Department. Two of these concern pollution:

1. "It is unlawful to deposit in, permit to pass into, or place where it can pass into the waters ...any substance or material deleterious to fish, plant life, or bird life."

2. "It is unlawful to deposit, permit to pass into, or place where it can pass into the inland waters of the State, or to abandon, dispose of, or throw away, within 150 feet of the high water mark of the inland waters of the State, any cans, bottles, garbage, rubbish, or the viscera or carcass of any dead mammal, or the carcass of any dead bird." (Does not apply to depositing such material in a container or refuse dump lawfully maintained.)

A bulletin from the Department says that citizens can help make the laws work by reporting violations to the Department of Fish and Game or to the U. S. Coast Guard.

Other Agencies

Aside from the foregoing regulatory agencies, a number of others are concerned with San Leandro Bay. Involvement of some agencies is for purposes pertaining to their own spheres of activity; some have regulatory involvement in comparatively minor ways. The following list (which may be incomplete) includes both regulatory and nonregulatory agencies other than those already mentioned, with a brief description of their involvement:

Regional

AC Transit - local bus routes
Bay Area Rapid Transit District (BART) - plans for extension to Oakland International Airport
Association of Bay Area Governments (ABAG) - reviews all applications for federal grants in aid
Bay Area Air Pollution Control District - controls air pollution by enacting and enforcing air quality regulations
East Bay Municipal Utility District (EBMUD) - land ownership; utilities service
East Bay Regional Park District - possibility of involvement in design, construction, and management of San Leandro Bay Park
Regional Water Quality Control Board - regulation of all controllable factors so as to protect the quality of water

State

California Environmental Quality Council - studies state policies and programs, develops plans, makes recommendations
California Resources Agency - umbrella agency supervising a dozen departments and offices having resource management responsibilities
Department of Public Health - shellfish survey; environmental sanitation
Department of Harbors and Watercraft - boating safety and control
State Division of Highways - plans for Doolittle Drive (Highway 61)
State Lands Commission - administers 4 million acres of state-owned land, including certain tidelands in San Leandro Bay

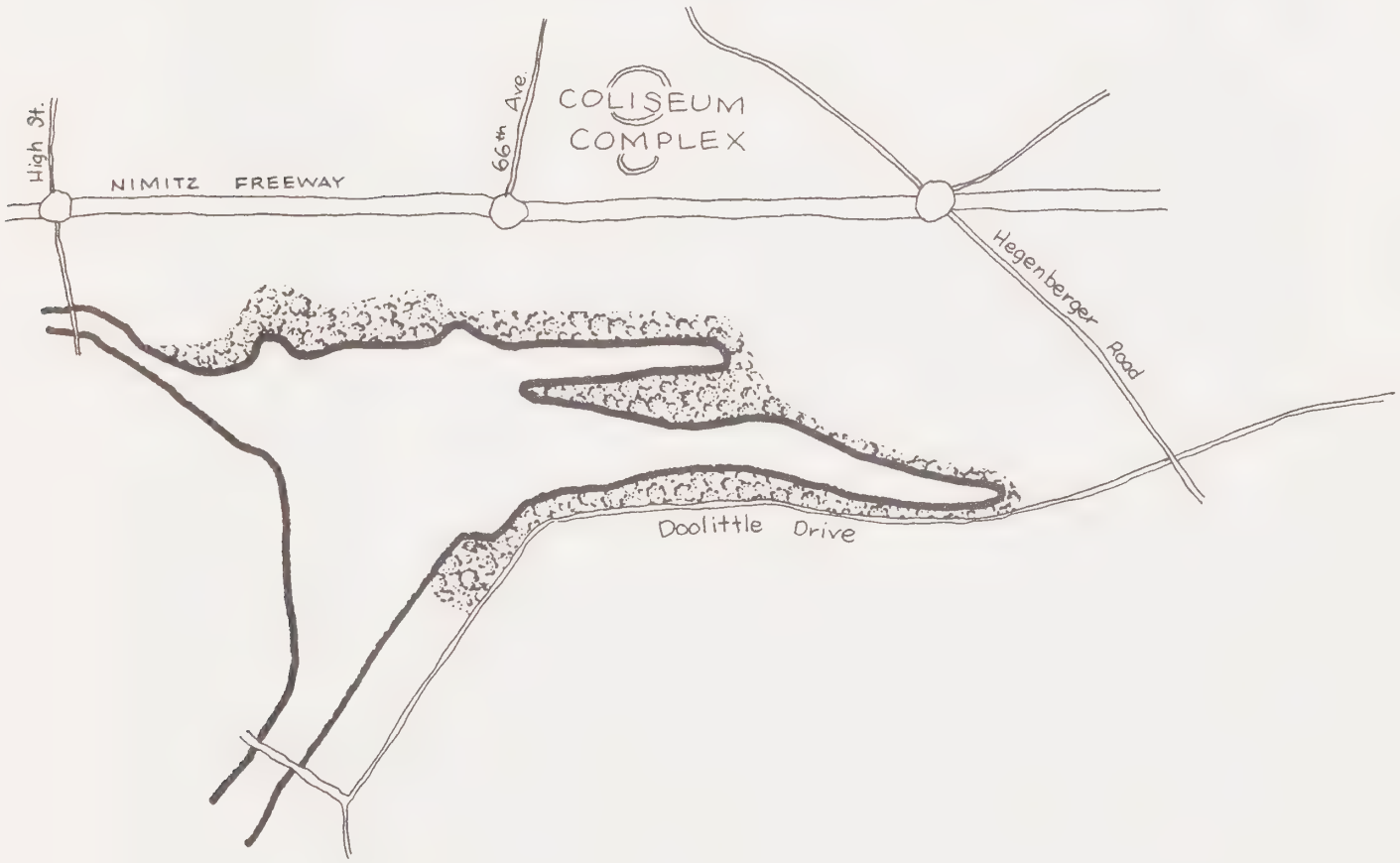
Federal

Environmental Protection Agency - sets standards for environmental protection with a special emphasis on pollution of all kinds
Federal Aviation Administration - air safety
U. S. Air Force - aerial photographs taken by Aerial Photographic Division of Pacific Resources, Inc.
U. S. Coast and Geodetic Survey - tide tables
U. S. Geological Survey - maps
U. S. Department of Housing and Urban Development (HUD) - agency through which City of Oakland received federal funds to develop San Leandro Bay Park Refuge (open space program); research, technology
(See Appendix B, POSSIBLE FUNDING SOURCES.)

VI. CURRENT PLANS AND PROPOSALS

Oakland General Plan

The Oakland General Plan shows a "major park or recreation area" around the entire Oakland shoreline of San Leandro Bay. A "water sports" area is indicated in Airport Channel. (See sketch below.)



Besides the General Plan, basic environmental policies currently appear also in Resolution No. 51836 C. M. S., which was adopted in 1971 as an outgrowth of the city-wide 701 Project. This document again calls for a major recreational area at San Leandro Bay.

San Leandro Bay Park Refuge

The City of Oakland has under construction a 5-acre parcel of land along the shore adjacent to the Municipal Service Center. This land is being developed as both a park and a refuge, where man and the wildlife can live together with benefit to both.

The development includes a fishing pier, a small marine-oriented play area, picnic facilities, and general paths and planting for man's enjoyment. For the wildlife there will be fresh-water ponds, native plant cover, and a new marsh. Construction should be completed by the end of June 1972.

Alameda Comprehensive General Plan

The Alameda Comprehensive General Plan shows recreational use along most of that city's San Leandro Bay shoreline. Specifically, it is indicated as follows: (1) On the existing dump site on Doolittle Drive, connecting with the Alameda Municipal Golf Course and continuing westerly as a park strip along the shoreline of Bay Farm Island. (2) On a fairly large site around the northerly end of the Bay Farm Island Bridge, connecting to the northwesterly with the South Shore park development and extending northeasterly in a narrow band almost to the mouth of the Tidal Canal.

Port of Oakland Plans

Shoreline and Water Areas. A resolution of the Board of Port Commissioners approved on November 10, 1971, reads: "...the Board of Port Commissioners hereby declares a moratorium on any change of land or water use within the San Leandro Bay Planning Area, except as may be jointly agreed upon by the Port and the BCDC until the intent of this Resolution has been fulfilled and a plan for the 'San Leandro Bay Planning Area' has been adopted by the Board of Port Commissioners and approved by the appropriate agencies."

Distribution Center. The Distribution Terminal area would be devoted to cargo-handling facilities with rail, truck, and air cargo intermodal capabilities. Rail and roadway access will be provided from the existing Industrial Park via new bridges at the mouth of San Leandro Creek. Although plans are not specific at this time as to type of buildings, construction, etc., it is envisioned that large warehouse and truck-handling facilities will be constructed under setback, sign, and construction controls similar to those now in effect in the Industrial Park.

BART Extension to Airport

In 1970 a study was undertaken by Kaiser Engineers to determine the feasibility of a transit link between the BART Coliseum station and the Oakland International Airport. This study produced four alternative route alignments, three of which passed through the San Leandro Bay study area. The second phase of the study, now in progress, is re-examining the route alignment in light of new criteria, principally the deletion of an intermediate stop at the Coliseum Complex and the strengthened emphasis on direct airport service. Although new routes under study are principally in the area south of Hegenberger Road, some routes are being evaluated within the San Leandro Bay study area.

BCDC Priorities

Maps establishing boundaries of areas reserved for designated water-oriented priority land uses around the shoreline of San Francisco Bay were submitted to the State Legislature in December 1971. These maps designate for water-oriented recreational use on San Leandro Bay the shoreline along Doolittle Drive and the shoreline on the north bank of East Slough continuing to the industrial property near the High Street Bridge.

Policies concerning marshes and mudflats have been defined by BCDC as follows: "Marshes and mudflats should be maintained to the fullest possible extent to conserve fish and wildlife and to abate air and water pollution. Filling and diking that eliminate marshes and mudflats should be allowed only for purposes providing substantial public benefits and only if there is no reasonable alternative. Marshes and mudflats are an integral part of the Bay tidal system and therefore should be protected in the same manner as open water areas."

Streets and Highways

Work is about to be started on restructuring the Hegenberger Road and Doolittle Drive intersection. Various studies have also been made, including: (1) an extension of Edgewater Drive across Damon Slough and the adjacent marsh along the Bay edge of EBMUD property and connecting to Tidewater Street; (2) a possible new street across San Leandro Creek at Elmhurst Channel intersection connecting the filled Erstwhile Marsh area with Edgewater Drive; (3) an extension of 66th Avenue across Arrowhead Marsh area to Doolittle Drive.

Flood Control Projects

A Washington, D.C., news release of March 10, 1972, said: "The Office, Chief of Engineers, Department of the Army, today announced that the

final Environmental Statement on the San Leandro Creek Flood Control Project...was forwarded to the Council on Environmental Quality. The proposed project provides for the construction of 7,100 feet of unlined earthen levees and 2,500 feet of rectangular concrete channel along the lower reaches of San Leandro Creek."

The ACFC&WCD, which sponsored the U. S. Corps of Engineers' project on San Leandro Creek, is responsible for lands, easements, rights-of-way, and maintenance provisions. In approving the project, the BCDC stipulated that the ACFC&WCD "shall provide public access to both sides of the channel...provide an all-weather walkway and bicycle path, and provide simple benches and litter containers."

The Environmental Impact Statement says: "Both sides of the channel are to be landscaped with appropriate trees, shrubs, and ground cover. Landscaping, public access, and recreation provisions...are to be performed within 15 months of the construction phases of the project." (See Appendix C, DREDGING.)

Pacific Gas and Electric Company

Two parcels of land include: (1) approximately 21 acres bounded by the southerly side of East Creek Slough, the S. P. Railroad spur track, the Lesser Tract, and Tidewater Street; (2) approximately 5 acres located southerly of Tidewater Street and the outlet of East Creek Slough. Excluding the slough, all the first parcel is filled with 15.1 acres fully developed as an operating service Center, and expansion of the Service Center is under way on the remainder. Approximately 1.5 acres of the second parcel are filled; approximately one acre is paved and in use for Service Center operations. There are no immediate plans for additional utilization of this parcel.

East Bay Municipal Utility District

At this time it is not known how much of approximately 20 acres of land west of the railroad will be required for future EBMUD operations.

Plans of Private Property Owners

A BCDC letter of March 3, 1972, outlined the Commission's policies with reference to Navajo Freight Lines property along the Tidal Canal. The letter, referring to priority uses submitted to the State Legislature on November 30, 1971, pointed out that the proposed use for a trucking terminal is in conflict with the Bay Plan for water-oriented recreation.

The Commission's jurisdiction extends only 100 feet landward of the shoreline, however, and any use beyond that would not require a BCDC permit. BCDC has advisory authority over inland areas which are the subject of Bay Plan policies. The letter expressed the hope that as much as possible of the area shown as a priority recreation site on Bay Plan Map 4 will be reserved "until a final development plan for the San Leandro Bay can be formulated."

VII. MUDFLATS AND MARSHES

Tidal Flats; Range of Tides

The Port of Oakland estimates that 400 of the 581 acres of open water in San Leandro Bay may be classified as tidal flats. How much is exposed at low tide depends on the lowness of the tide. Low tide may vary from minus a foot and a half (zero is the shoreline established by Coast and Geodetic Survey soundings) to more than 3 feet. High tide may vary from approximately 4 feet to about 7.5 feet. The range of a single tide may be less than 2 feet or as much as 9.5 feet. Wind and rain may make tides even higher. Highest tides may cover Arrowhead Marsh completely. The lowest tides may reduce San Leandro Bay to little more than a web of narrow channels coursing through mudflats. (Plates 2 and 3.)

Characteristics of Mudflats

Mudflats have an important role in providing oxygen to maintain fish life and abate pollution. Mud algae, exposed to abundant light alternating with abundant water, produce and expel oxygen into the air as well as into the water. Mudflats are rich with worms, clams and other shellfish, snails, crabs, and other forms of animal life. Tiny fish swim in the low-tide channels. Larger fish come in with the flow of the tide. Mudflats are the feeding ground for many varieties of shorebirds; at high tide they provide food for many forms of aquatic life. (See Appendix F, WHAT EATS WHAT IN THE MARINE WORLD.)

Types of Marsh

Marshes are defined by the presence of one or both of two plants: cord grass (spartina) and pickleweed (salicornia). Cord grass can stand up to 21 hours of submersion each day. Pickleweed, on higher ground, may adapt to dry conditions, but requires thorough watering twice a year.

Two types of cord grass marsh exist in San Leandro Bay. Old marsh, characterized by the tidal undercutting of edges, is found in Arrowhead Marsh, along Doolittle Drive, and in Damon Marsh (the marsh between EBMUD property and the 66th Avenue overpass (extended). Developing marsh is in the narrow marginal strips along the north bank of East Slough, on the south end of the Alameda east shore, and in a small new stand in San Leandro Creek near Hegenberger Road (roots from this stand will be moved to San Leandro Bay Park Refuge in an attempt to establish a new marsh there). A new marsh is rapidly developing along the South Shore of Alameda.

Cord grass is rich in nutrients; per acre it produces from 5 to 10 times as much as wheat. It traps debris and checks erosion; it traps sediment

S.F. BAY — TIDES & MARSHES

prepared by:
Bayfront Committee
Loma Prieta Chapter
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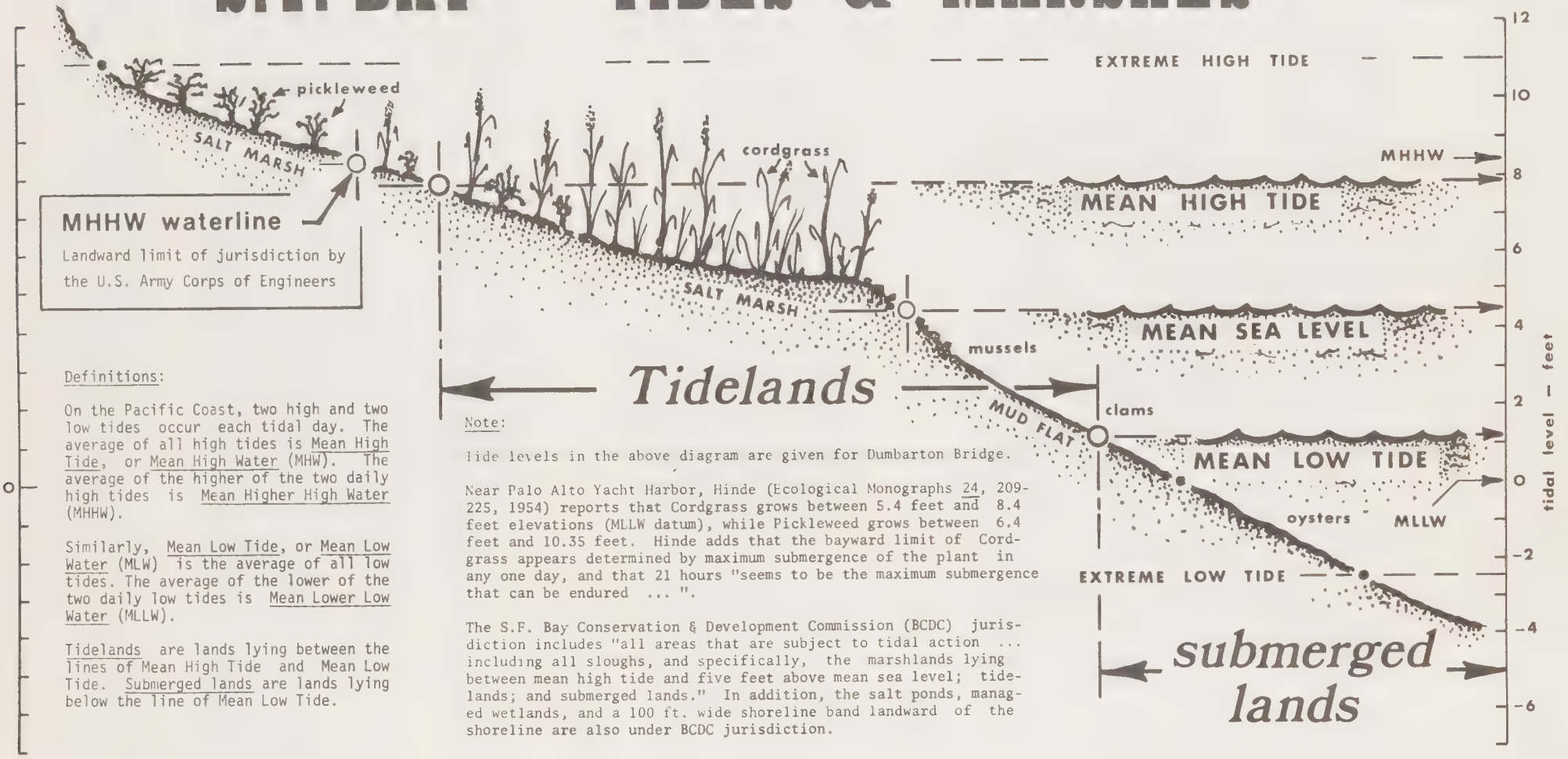


MHHW waterline

Landward limit of jurisdiction by the U.S. Army Corps of Engineers

Definitions:

On the Pacific Coast, two high and two low tides occur each tidal day. The average of all high tides is Mean High Tide, or Mean High Water (MHW). The average of the higher of the two daily high tides is Mean Higher High Water (MHHW).

Similarly, Mean Low Tide, or Mean Low Water (MLW) is the average of all low tides. The average of the lower of the two daily low tides is Mean Lower Low Water (MLLW).

Tidelands are lands lying between the lines of Mean High Tide and Mean Low Tide. Submerged lands are lands lying below the line of Mean Low Tide.

Note:

Tide levels in the above diagram are given for Dumbarton Bridge.

Near Palo Alto Yacht Harbor, Hinde (Ecological Monographs 24, 209-225, 1954) reports that Cordgrass grows between 5.4 feet and 8.4 feet elevations (MLLW datum), while Pickleweed grows between 6.4 feet and 10.35 feet. Hinde adds that the bayward limit of Cordgrass appears determined by maximum submergence of the plant in any one day, and that 21 hours "seems to be the maximum submergence that can be endured ... ".

The S.F. Bay Conservation & Development Commission (BCDC) jurisdiction includes "all areas that are subject to tidal action ... including all sloughs, and specifically, the marshlands lying between mean high tide and five feet above mean sea level; tidelands; and submerged lands." In addition, the salt ponds, managed wetlands, and a 100 ft. wide shoreline band landward of the shoreline are also under BCDC jurisdiction.

and builds drier and higher ground as roots form into clumps and into hummocks that become nesting sites for birds or homes for small animals like the harvest mouse. It withstands tidal action, varying salinity, a wide range of temperature, and the violence of floods and storms. Decayed cord grass feeds invertebrates and fertilizes algae.

Pickleweed begins to grow on the higher parts of cord grass marshes. Although Arrowhead Marsh, which goes under water at the highest tides, is almost entirely a stand of cord grass, Erstwhile Marsh (the 200 acres being filled) was entirely a pickleweed marsh webbed by streams and channels of open water.

Pickleweed marshes attract other plants, including the orange-colored parasite, dodder. Gum plant (grindelia) and other flowering plants grow along the edges where the ground is higher. Salt grass comes in on the higher ground. Root masses of pickleweed check erosion of stream banks.

Pickleweed marshes attract many birds. California clapper rails (endangered species), egrets, herons, bitterns, and other birds feed in such marches. Short-eared owls and marsh hawks, as well as sparrow hawks, red-tailed hawks, shrikes, and kites dive from the air to find food in the marshes. Willets, black-necked stilts, Canada geese, and several species of ducks are among the birds that nest in pickleweed marshes. Water channels attract grebes and dabbling ducks, such as pintails, teal, shovelers, and widgeons.

Remnants of cord grass and pickleweed are in the diked area on Doolittle Drive next to the Alameda Dump. This area, during the current winter of 1971-72, has been the major resting place for the larger shorebirds. Seepage provided the water necessary for avocets; this is almost the only area bordering San Leandro Bay where avocets can still be seen. Black-necked stilts moved to this section from Erstwhile Marsh after last spring's nesting season, and phalaropes were fairly numerous for a time. More than 200 elegant terns, as well as Forster's, Caspian, common, and least terns, were seen here during the summer and early fall of 1971.

The best remaining pickleweed is on the banks of San Leandro Creek, on the bank of Airport Channel on the Erstwhile Marsh side, and along Doolittle Drive.

Loss of Marsh Lands

A U. S. Geological Survey (Nichols and Knight) reported that 120,000 acres of marshland was destroyed in San Francisco Bay between 1860 and 1968. A Fish and Game Department Coastal Wetlands Survey made in 1967 said that 49,000 acres of marsh was all that then remained in all of California. From 20,000 to 30,000 acres of this was all that was left in San Francisco Bay, the report stated. (Plate 1.) A study made by the federal Bureau of Sport Fisheries and Wildlife showed that in

California, 67% of the original marshes are gone, mostly from the Bay area. Interestingly, the figure for New York State, second state in loss of Marshes, is only 15%.

The loss of marsh around San Leandro Bay has been extensive. Areas that were once marsh include the north field of Oakland Airport (the new airport is on San Francisco Bay fill); Alameda golf courses and other land adjacent to Doolittle Drive; Nimitz Freeway paralleling Oakport Street; land owned by PG&E and EBMUD; the Port of Oakland Industrial Park; and various other now high-and-dry sections. The Port estimates that only 60 acres of marsh now remain; these include the 57 acres of Arrowhead Marsh.

In 1931 the California Legislature designated 1,600 acres of San Leandro Bay as a wildlife refuge. Most of this was marsh, which extensive filling converted to other uses. Shore- and waterbirds cannot exist on dry land.

The remaining marsh in San Leandro Bay should be kept and new marshes encouraged. According to the Nichols and Knight survey, West Marin County gained 850 acres of marsh during the survey period. Could San Leandro Bay marshes be encouraged so that there would be a buildup of the aquatic life that is basic to all life in the ocean? The crab industry, for example, appears to need that kind of help.

VIII. F I S H A N D F I S H I N G

Varieties of Aquatic Life

A California Academy of Sciences study identified more than 70 species of fish caught in San Francisco Bay. Wildlife experts believe there are more, perhaps as many as 100. Most of these, it is thought, are present in San Leandro Bay at one time or another. (A harbor seal was photographed in San Leandro Bay in the spring of 1971; undoubtedly it was fishing.)

Chief types caught are striped bass, perch, smelt, and shiners. Steelhead go up San Leandro Creek; boys were seen netting them in the spring of 1972. Striped bass up to 25 pounds have been caught near the mouth of San Leandro Creek. Sturgeon spawn in the Bay.

At very low tides clamdiggers explore the mudflats of Airport Channel and the mudflats off Damon Marsh (clams are not recommended for human consumption). Extensive beds of mussels are in the banks of San Leandro Creek (contaminated). Crabs, shrimp, and shellfish are found in all mudflats and marshes; barnacles are on the posts in Airport Channel and attach themselves to debris in the water.

Food for Fish

Laboratory tests (which may not be reliable) indicate that many fish feed on material suspended in the water. Striped bass feed on substances in the sediment (mercury and zinc contamination are in all parts of San Leandro Bay). Sturgeon feed on barnacles, clams, shrimp, and small fish. Young fish feed on insects in the marshes and on organisms that drift in the water. Big fish come in with the tide to feed on little fish. When the tide is low, little fish stay in the pools and small channels to feed and to rest. (See Appendix F, WHAT EATS WHAT IN THE MARINE WORLD.)

Threats to Fish Life

Ask any fisherman, "How's fishing?" and he's likely to say, "Not so good as it used to be." One reason is certainly the loss of spawning grounds. Marshes and estuarine waters are known as the nursery for all sea life. Fish used to spawn in Erstwhile Marsh. Any threat to a marsh is a threat to fish.

Dredging of any kind threatens fish life. Churning of the water by any means has an effect on young fish; most will not reestablish after being disturbed. Removal of tidal flats destroys feeding grounds. Removal of shrubs and other vegetation near the shore takes away the native insect life. Any disturbance of the food chain affects fish life.

Water pollution, often of unknown origin, threatens fish. Dead fish float in with the tide. On one occasion early last summer (1971) at least a dozen big dead stripers were seen in San Leandro Creek.

Where People Fish

There are seasonal fish "runs" in San Leandro Bay. Just when they occur is not generally known. The easiest way to find out is to observe. Fishermen seem to have a mystic chain of communication. Here come the fish! Here come the fishermen! Talk with them; you'll learn a lot. Or just watch to see when they arrive on the shores for stripers, perch, smelt, or steelhead.

Last summer (1971), when fish were being driven into smaller and smaller space by fill operations in Erstwhile Marsh, fishermen joined the egrets and herons for easy catching along the edges of the channels. (Turkey vultures looked for carrion.)

At almost any high tide fishermen can be seen in the favorite places: (1) near the mouth of San Leandro Creek and along the bayward shore; (2) at the junction of Elmhurst and San Leandro Creeks; (3) near the mouth of Damon Creek; (4) along both sides of Airport Channel, especially on the old dock on the Airport side; (5) on the Alameda shore toward the Bay Farm Island Bridge; (6) along the east side of the Tidal Canal.

Improvement of Fishing

Requirements of fisher-people are simple. Elaborate piers and docks are not needed. Access to the shore is of first importance. Parking space for cars is desirable; restroom facilities are always welcome. Much of the enjoyment that people get from fishing comes from being outdoors. Fishing pleasure is not always dependent upon the catching of fish. Fishermen linger as long as there remains the possibility of a "bite," or a "catch" occasionally.

IX. B I R D L I F E

At the International Ornithological Congress, meeting in Helsinki, Finland, in 1958, a well-known ornithologist said that the best place in all the world to view shorebirds was Bay Farm Island and its vicinity. At the right season of the year, he told his audience, they would find the largest concentration of shorebirds, both in numbers and in species. San Leandro Bay was not yet so well known, but even then the major resting sites for shorebirds were in the San Leandro Bay area. The Bay Farm Island feeding grounds no longer exist, but shorebirds are still one of the most distinctive features of the San Leandro Bay area.

Variety of Species

A total of 99 species, almost one-fourth of those listed in "Birds of Northern California" by Guy McCaskie and Paul De Benedictis, have been seen in the San Leandro Bay area. Included are (1) residents, (2) summer visitors, (3) spring and fall migrants, (4) winter visitors, and (5) a few casual visitors. (See Appendix G. BIRDS OF SAN LEANDRO BAY.)

Peaks of Population

Shorebirds are most numerous at the height of their annual migration in March-April (going north to their nesting grounds) and in August-September (returning to their winter homes). A few ducks arrive in late July or August, but most do not return until October or November when stormy weather prompts them to move south. Terns and pelicans come in the late spring and summer, some to nest here and some having nested in more southern locations. Comparatively few shore- or waterbirds are seen in May and June.

Endangered Species

California Clapper Rail. This resident of marshes only in the San Francisco Bay area is endangered by loss of habitat. Erstwhile Marsh was a well-known nesting site. Several were seen in Arrowhead Marsh during the annual count on January 2, 1972 (See Appendix H, ANNUAL BIRD COUNTS OF 1972 AND 1971). Whether the marsh there offers high enough ground for nesting is not known. A number of clapper rails wintered on the Alameda South Shore, but none were seen after mid-March. The numbers next winter may tell how well rails in the San Leandro Bay area were able to adapt to a loss of habitat.

Brown Pelican. The brown pelicans that appear in the late summer and early fall are believed to have nested in Mexico. Brown pelicans are threatened by pesticides.

Least Tern. Least terns were seen in the summer of 1971 in the channels of Erstwhile Marsh; the only possible nesting site has been covered by fill. Least terns also nested on the Utah fill on Bay Farm Island. These dainty, robin-sized terns require sand for nesting.

What Birds Need

Feeding Grounds. Shorebirds feed on the mudflats. Dabbling ducks upend in marshes and shallow water. Diving ducks, grebes, pelicans, terns, cormorants, herons, and egrets fish in open water. Some birds fish near the shore, others in water as deep as 20 feet, and still others dive from the air. (See Appendix F, WHAT EATS WHAT IN THE MARINE WORLD.)

Resting Places. Shorebirds rest between tides in marshes, shallow water, dry upland areas. Most extensively used in the winter of 1971-72 was the diked area near the Alameda dump. Other resting sites were the new fill in Erstwhile Marsh, Damon Marsh, and a filled area on EBMUD property. The diked area on Doolittle Drive was the only place where numbers of avocets were seen (except on the Airport). Avocets rest in shallow water. Birds that fish from the air rest in special places. The old hulk off East Slough is used by pelicans, cormorants, herons, and gulls. These birds--also terns--perch on the posts in Airport Channel. Terns and gulls gather on spits of land that poke from the water on an ebbing tide. Tall trees in Alameda provide resting places for black-crowned night herons.

Nesting Sites. Erstwhile Marsh was an excellent nesting site for a number of birds--colonies of black-necked stilts, rails, pied-billed grebes, American bitterns, marsh song sparrows, the infrequently seen Lincoln sparrows, willets, a few Canada geese, and ducks such as mallards (a fair number), pintails, and teal. So long as pickleweed remains on the banks of San Leandro Creek, the sparrows may be expected to nest there. Some birds will nest in Arrowhead Marsh; others, on the Airport. Nesting possibilities in general are not now predictable.

Airport Safety

Bird Hazards. Every airport is constantly alert to hazards presented by birds, which have sometimes caused major disasters. Oakland Airport has had its share of "bird strikes". Gulls probably are the major threat. Shoreline dumping of garbage that attracts them should eventually be abandoned.

Pacific Flyway. Oakland Airport and San Leandro Bay are on the flyway used by migrating birds. A good way to keep birds off the Airport is to attract them elsewhere by good habitat. To help protect the Airport, the natural habitat of birds in San Leandro Bay should be preserved.

Annual Bird Count. Shorebirds showed the greatest increase on the Airport in the 1972 annual count. A few birds formerly associated with Erstwhile Marsh were recorded there for the first time. (See Appendix H, ANNUAL BIRD COUNTS OF 1972 AND 1971.)

Recreational Value

Birdwatching. Persons of all ages, alone or in groups, can enjoy the popular hobby of birdwatching. Binoculars in use often serve as an introduction to congenial companions--particularly when a person is away from home. The San Leandro Bay area is widely known among amateur birdwatchers and professional ornithologists. Sierra Club Natural Science Section and Golden Gate Audubon Society used to conduct field trips in the area.

The Audubon office in Berkeley receives many phone calls from visitors asking where to go to see birds, especially shorebirds. (There are waterbirds, but no shorebirds, on Lake Merritt.) Senior citizens often travel long distances to see birds. A recent visitor from New Jersey, who was taken to Doolittle Drive, wrote, "That morning was not only the highlight of my trip west, but it was one of the highlights of my entire birding experience."

Photography. Bird photography intrigues many birdwatchers, who often take pictures--sometimes to illustrate talks on birds. The diked area on Doolittle Drive is a favorite place for closeup views.

Educational Value

High School and College Classes. Several university professors have regularly scheduled field trips to San Leandro Bay, particularly to Erstwhile Marsh, to study aquatic life. One high school class mapped the developing marsh on the Alameda South Shore.

Special Projects. A student from Cal State at Hayward collected insects. A high school senior spent many hours exploring life in the mudflats. A candidate for a doctoral degree researched into the history and development of marshes. The California Department of Fish and Game sponsors a twice-a-month count of shorebirds; statewide computerized data are available to advanced students.

Audubon Nature Training Program. The Golden Gate Audubon Society has 23 leadership training courses scheduled in 10 different cities during the spring of 1972. This program expanded from a single class in Berkeley; every student is a potential leader. Such a program has real potentialities for San Leandro Bay.

East Bay Regional Park. As part of the district-wide interpretative program, ranger-naturalists have done considerable study on the Alameda South Shore and at Alameda Memorial State Beach. Their experience in dealing with a similar habitat and similar wildlife could be invaluable.

Elementary School Classes in Palo Alto. Every fourth-grade child in that city has an educational experience when he is taken by bus to the wildlife sanctuary on the Bay shore. The local Audubon Society and the Palo

Alto Chamber of Commerce combined efforts to make possible this wildlife preserve. The attractive nature center, staffed by volunteers, is a popular attraction for adults, as well as children. San Leandro Bay has a similar potential.

Lakeside Park. Members of the naturalist staff from the bird refuge at Lake Merritt have often visited San Leandro Bay to take photographs and to gather information about wintering shorebirds. (These birds do not visit Lake Merritt because they need very different feeding grounds.) These men have contributed generously of their store of information and experience to birdlovers who visit San Leandro Bay.

Areas Needing Protection

Arrowhead Marsh. This marsh is used most frequently by the great blue heron (4-1/2 feet tall with a 6-foot wing spread), common and snowy egrets, black-crowned night herons, some clapper rails, and possibly bitterns. Some may nest here. During most of the year the adjacent mudflats abound with shorebirds of several species. Ducks feed in the shallow water and seek shelter along the banks of sloughs.

All Other Marshes, Particularly Damon Marsh. Damon Marsh is possibly capable of restoration as a nesting site for the comparatively few species that breed here. It was heavily used in the winter of 1971-72 as a high-tide resting site for shorebirds and ducks.

Mudflats. Life of both fish and birds depends on food. The food chain begins with organisms that float in with the tide. Caught in the marshes and mudflats, these become food for beginning forms of aquatic life. The abundance of aquatic life in San Leandro Bay is best evidenced when shorebirds poke hungrily into the mud at low tide.

Loafing Area on EBMUD Property. Used in the winter of 1971-72, this was plainly "make-do", but birds need a protected site in that part of the shoreline.

The Diked Area on Doolittle Drive. Since the spring of 1971, when filling began in Erstwhile Marsh, the critical importance of this area to birdlife has been increasingly evident. During the summer of 1971 large numbers of terns congregated here. As the high water receded and mudflats were exposed, sandpipers appeared in considerable numbers. Phalaropes came during the summer. Since August 1971, when shorebirds came from the north in large numbers, hundreds of big waders began to rest in the remaining marshes and along the shores. During the winter of 1972 dabbling ducks fed in the water. A few black-necked stilts (many nested in Erstwhile Marsh in previous years) arrived in March 1972. Whether they can find a place to nest is problematic.

Perching Places. These include the old hulk off East Slough, free-standing pilings in Airport Channel, and wires near San Leandro Creek.

X. PUBLIC USES

Present Uses

The varied ways in which the open-space area of San Leandro Bay and its shorelines are used illustrate how people find leisure-time possibilities wherever opportunity affords. Examples are:

Education. High school and college students have regularly explored life in the marshes and mudflats and have studied marsh and shoreline vegetation. Erstwhile Marsh, formerly the site of most group study, is no longer available. Individual research projects continue.

Boating. Airport Channel is a popular weekend area for power boats. On calm days, if the tide is high, canoes and rowboats use the waters of the Tidal Canal and adjacent sections of the Bay. On January 2, 1972, 35 sailboats entered San Leandro Bay from the Oakland Estuary, went past the Aeolian Yacht Club, which has drydock space and berths for 40 boats, and sailed out the Bay through the channel under the Bay Farm Island Bridge to their rendezvous in Ballena Bay. Alameda residents like to watch the U. C. crew in practice sessions off the east shore of the Island City.

Water Skiing. On warm sunny days--and even not-so-warm winter days--water skiing is a popular sport in Airport Channel. Several records have been set in San Leandro Bay.

Fishing. Excellent fishing is evidenced by the many fishermen (and women) who gather at such places as the junction of Elmhurst and San Leandro Creeks, on the Alameda shore near the Bay Farm Island Bridge, near the Tidal Canal, and on both sides of Airport Channel. (See Chapter VIII, FISH AND FISHING.)

Clamdigging. At very low tides clamdiggers dot the mudflats in Airport Channel. The shore off Damon Marsh is also used by clamdiggers.

Birdwatching. Birdwatchers, with binoculars and telescopes, study birds on the mudflats and high-tide resting places. These areas attract not only residents of the San Francisco Bay area, but also men and women from other parts of California, from other states, and even from foreign countries. (See Chapter IX, BIRD LIFE.)

Photography. Photographers are always alert for pictures of birds on the shore and in the water. They find subjects ranging from intriguing shadows and reflections in shallow water or on the mudflats to distant views of the Oakland hills or the San Francisco skyline. Dawn on the mudflats looking toward sun-reflecting windows in San Francisco is a happy subject for photographers.

Miscellaneous Sports. Alameda's model airplane field on Doolittle Drive is much used weekends. Open fields in the Industrial Park are also used by model airplane experimenters. A new mini-bike course has been opened on the Alameda dump. Kite flying is springtime fun in open fields in the Industrial Park. On weekends and on school holidays a few bicyclists brave the traffic hazards of Doolittle Drive.

Quiet Enjoyment. The driver who slows down on Doolittle Drive to permit his passengers to enjoy the sparkling lights of the East Oakland hills; the woman who unfolds her aluminum chair and prepares to knit while she enjoys the companionship of her fisherman husband and eager "exploring" children; the householder who watches for moonrise from his garden on the Alameda shore--many people now enjoy the glint of water, the open space, and the quiet along the shores of San Leandro Bay.

Potential Uses

The following uses seem possible, although information about some is not yet sufficiently complete to warrant recommendation.

Education. Unusual opportunities for nature training are evident in the abundant bird life. One of the most distinctive features of San Leandro Bay is its location on the Pacific Flyway. Fascinating and rewarding educational programs could easily be planned for San Leandro Bay. Details of programs in progress elsewhere could be obtained from the bird refuge at Lake Merritt (Lake Merritt does not attract any shorebirds because it has no feeding grounds for that kind of bird); the nature training center developed in Palo Alto through the combined interest of the Chamber of Commerce and the Audubon Society; and the Golden Gate Audubon Society program, which in the spring of 1972 is offering 23 courses in 10 different cities. The program of displays, classes, and trips offered on the Alameda shore as part of the East Bay Regional Parks interpretative-education venture could complement a San Leandro Bay program because it deals with the same forms of wildlife.

Boating. Boating of all types--power, sail, rowing, racing shell--is probably self-limiting because it is restricted by narrow channels and shallow water. Another limitation may be developing. Airport Channel, the most extensively used area, is reported to be becoming more shallow as the weight of fill on the adjacent marsh increases. Plate 2 shows heavy siltation offshore from the Alameda dump.

With boating there are some associated problems to be considered: water pollution from fuel and waste discharge that affects aquatic life in mudflats; noise that during speedboat races far exceeds accepted decibel criteria; effect upon fish of churning of water; effect on bird life. Birds and boats seem to get on reasonably well at present levels of use. Boat races are scheduled at high tides, principally during summer months; shorebirds feed on the mudflats at low tide, principally in the fall and winter. Summer birds, chiefly terns, move to other parts of San Leandro Bay during races; diving ducks and grebes commonly seen in Airport Channel move elsewhere during racing periods.

Crew Racing. This popular sport requires a course 2,000 meters long in a straight line and 500 feet wide; 400 feet at the end of the course for stopping; 10 feet dredged below low water. The area preferred would be straight out from San Leandro Creek to the Tidal Canal.

Dredging would require approval of several government agencies. A carefully researched environmental impact statement would have to be approved. Unknown elements to be considered include the cost; the sponsoring agency; effects upon fish and birds and their food in the mudflats; access of spectators to the shoreline and their impact on the shorelines of the new San Leandro Bay Park Refuge and the Oakland City Service Center; parking needs and security needs of tenants in the Industrial Park. (See Appendix K, PROPOSED CREW RACING, and Appendix C, DREDGING.)

Proposed Seaplane Base. A proposal has been submitted to the Port of Oakland and the Federal Aviation Administration for permission to construct and operate a seaplane base on San Leandro Bay. Such a base would generate approximately 200 landings a month. Three landing areas are proposed: a high-tide area, beginning north of the tip of Arrowhead Marsh and extending toward the Route 61 bridge (Bay Farm Island Bridge); a primary low-tide area in the northern half of Airport Channel, running parallel to the eastern shoreline; and a secondary low-tide area adjacent to the City Service Center. The FAA Airspace Branch has objected to the proposal; it is expected that the applicant will appeal this decision, since Airport reaction to the proposal has been favorable. (See Appendix J, PROPOSED SEAPLANE BASE.)

Water Skiing. The Golden Gate Water Ski Club, which used to use Airport Channel extensively, moved several years ago to the Sacramento River delta area, where the club owns two islands and members can ski 2 or 3 miles at a stretch. Several features of Airport Channel are reported to have made the area less attractive.

"The salt water doesn't do boats any good, and there's too much traffic," one member said. "Skiers like smooth water; when wakes left by boats begin to crisscross and pile up, the skiing can become hazardous. Skiers like to have more water beneath them than Airport Channel has on an ebbing tide. The Sacramento River depth permits skiing at all times.

"And there are many good fresh-water lakes behind dams," the member added.

Fishing. Fishing isn't so good as it used to be, fishermen seem to agree. Improvement could be expected, however, with better water quality, improvement of spawning grounds, and minimum disturbance of the habitat. Fishermen expect to continue to fish so long as they have access to the water and tides to bring in the fish. (See Chapter VIII, FISH AND FISHING.)

Clamdigging. Part of the digging is for bait. Although human consumption is not recommended, some people plainly ignore the health hazards. Improvement of water quality and minimum disturbance of the habitat would be desirable.

Birdwatching. Since Erstwhile Marsh has been in the process of being filled, the area formerly most frequently visited by birdwatchers has been unavailable. During the winter of 1971-72 their interest has been focused on the diked area on Doolittle Drive, where wintering birds have congregated by the hundreds at high tides. The great variety of species will continue to attract ornithologists and amateur birdwatchers as long as the habitat is protected. Experts from other Bay area cities who participate in the annual Audubon "Christmas" count look forward to learning each year what has happened in the San Leandro Bay area since the last count. (See Chapter IX, BIRD LIFE.)

Photography. Because of the beauty and variety of visual experiences along San Leandro Bay, photography should continue to be a major activity. Increased and more convenient access will increase the enjoyment of this activity; walking paths, bikeways, and greater use by people will add to the photographer's enjoyment.

Miscellaneous Uses. With the formation of the East Bay Bicycle Coalition and their suggestion that San Leandro Bay might be the hub of bicycle routes to outlying areas, this activity may be expected to increase. More demand for bicycle paths and more concern about bicycle safety will be demonstrated with the growing popularity of this form of recreation. As the shoreline becomes more accessible and trails are developed, there will be more walking, running, and hiking. Model airplane flying and mini-bike areas will continue to attract devotees of these activities. Kites will continue to be seen at the proper time of year wherever there are open spaces.

Outdoor recreation groups, such as Sierra Club and Audubon Society, may be scheduling field trips in the area as trails are developed.

Quiet Enjoyment. A great potential of San Leandro Bay is to provide, within the urban area, places of solitude and relative isolation. As secluded areas and vista points are developed and as access to the shoreline becomes easier, outdoor lovers may be expected to take advantage of opportunities to watch a sunset, contemplate the Oakland Hills across an expanse of water, or see a jet plane zoom up from the Airport. San Leandro Bay should become popular with urban dwellers who cannot walk far, but who enjoy looking into the distance and being out of doors.

XI. GOALS AND RECOMMENDATIONS

Goals

1. To retain the unique value to man of a major water-oriented open space in the heart of an urban area.

2. To preserve, maintain, and expand if possible the distinctive wildlife habitat, so that

   a. The total natural life cycle can be preserved, especially with respect to endangered species.

   b. The potential educational and leisure-time benefits can be maximized.

   c. Safety of both aircraft and birds at the nearby airports can be assured.

3. To encourage the use and enjoyment of the Bay by man to an extent that is consistent with the goals of paragraphs 1 and 2.

General Land and Water Use Guidelines

1. The San Leandro Bay area is large and varied enough to accommodate a great range of activities if properly planned.

2. The entire San Leandro Bay and its shoreline should be considered a single planning unit.

3. All undeveloped areas within the 100-foot band of BCDC jurisdiction should be maintained primarily for park, open-space, or refuge purposes.

4. Man should be restricted from areas where his presence would harmfully disturb the wildlife.

General Recommendations for the San Leandro Bay Planning Area

1. Mudflats, marshes, and high-tide resting sites used by birds should be preserved, protected, and (marshes and resting sites) expanded wherever possible.

   Mudflats for food, marshes for food and shelter, and protected sites (sometimes dry land, sometimes shallow pools, sometimes marshes) for high-tide resting--all are needed. (Plate 7.) (See Chapter IX, BIRD LIFE.)

2. Facilities for nature education should be provided.

   Such facilities, near Arrowhead Marsh but not in it, might include a nature center, bird observation stations at appropriate locations, and provisions for self-guided nature walks. The best location for a nature center would probably be in the vicinity of the junction of San Leandro and Elmhurst Creeks. An observation platform or tower, with supporting facilities, could be strategically located for viewing both Arrowhead Marsh at high tide and the adjacent mud-flats and open water at low tide. (Plate 7.)

3. Facilities for fishing should be provided.

   Elaborate piers and platforms are not needed, since fishermen tend to follow the fish instead of waiting for fish to come to a man-chosen location. The dock on Doolittle Drive now used by many fishermen might be repaired and strengthened. Parking space and restroom facilities are major items. Fish cleaning facilities are welcomed by fishermen and guard against pollution. (See Chapter VIII, FISH AND FISHING.)

4. Dredging should be limited to that needed for flood-control or other approved, planned purposes which would not have long-lasting adverse effects on the aquatic environment.

   Any dredging should have the approval of the appropriate regulatory agencies. (Plate 4.) (See Appendix C, DREDGING, and the paragraph on Threats to Fish in Chapter VIII, FISH AND FISHING.)

5. The use of San Leandro Bay for landing and take-off of seaplanes should not be permitted unless it can be demonstrated that such use would not be in conflict with the GOALS and GUIDELINES set forth at at the beginning of this chapter.

   (See section on Seaplanes in Chapter X, PUBLIC USES, and Appendix J, PROPOSED SEAPLANE BASE.)

6. No roads, bridges, or other structures should be built across the main body of San Leandro Bay or Arrowhead Marsh.

   The scenic beauty of San Leandro Bay as an open space, as well as the distinctive ecological values, should be preserved. Because of the disruptive and pollutive aspects, no tube structure should ever transverse the Bay. However, a tunnel, the construction of which would not disturb the Bay bottom, would be acceptable.

   Any major construction across the Bay or beneath it would break the existing fragile life chain and drastically alter or destroy much of San Leandro Bay.

7. Filling should be limited to that consistent with the GOALS and GUIDELINES of this chapter.

8. Only those activities should be permitted which are consistent with the GOALS and GUIDELINES of this chapter.

Compatible activities should be encouraged. Many forms of outdoor activity can be pursued without interfering with each other if adequate facilities and surroundings are provided. Such activities would include (but would not be limited to) fishing, clamdigging, birdwatching, hiking, jogging, walking, bicycling, kite flying, nature study, photography, botanizing, insect gathering, sailing, crew racing, canoeing, viewing, contemplation, and sunbathing.

Activities conflicting with the GOALS and GUIDELINES should be minimized or eliminated wherever possible. Some activities might be acceptable now, but may have to be phased out as public use of the Bay for recreation increases. The agency responsible for operating the park and open-space areas will have to determine when changes in use require re-evaluation of the suitability of ongoing activities.

Noise makers, such as model airplanes and mini-bikes, might be acceptable in certain areas already characterized by traffic noise. Power boat racing in Airport Channel (Plate 7.) is deemed acceptable at this time with the following restrictions:

a. Racing limited to Airport Channel southeast of Hallett Marine.
b. Frequency of races to be held at approximately the present level.
c. Noise control methods, such as land or plant barriers (or both), and mufflers on boats, to be introduced to minimize conflict with more quiet activities.

9. Shoreline accessibility should be improved.

Approach through private lands is desirable in the northeast sector, where there is still a fairly sizable open area. The opening of San Leandro Bay Park Refuge will not only make a stretch of shoreline open for use, but will provide a good view of Damon Marsh and the EBMUD property. Access along San Leandro Creek should be made possible for fishermen and birdwatchers, who have long used the area; this section has major recreational potential.

10. Use of the Planning Area for motor vehicles and parking should be minimized.

Wherever possible, parking areas should be provided at strategic places outside the Planning Area and should be visually screened from the shoreline park. (Plate 7.)

11. Continuous bicycle and pedestrian trails around the Bay should be developed.

    Such trails, following the shoreline where possible (except in sensitive marsh areas), should be suitable for bicycle riding, walking, jogging, and hiking. Bicycle trails should be separated from pedestrain trails wherever possible. They should be located so that they can easily connect with walking and bicycle ways to and within other parts of Oakland, Alameda, and San Leandro.

    Bicycle and pedestrian ways should be constructed between the Coliseum and BART station and San Leandro Bay. Safe pedestrian and bicycle crossings across Hegenberger Road and Doolittle Drive to connect with the edge of Galbraith Golf Course should be built to serve as a link with the San Leandro Shoreline. (Plate 7.)

12. Additional public transportation should be provided to major access points in the Bay Planning Area.

13. All new elements, including buildings and plantings, should be designed to be compatible with the GOALS and GUIDELINES of this chapter.

14. Aesthetic values should be enhanced.

    Removal of debris, particularly on the Nimitz Freeway side of the Bay, would improve the appearance of the shoreline. Certain resting sites such as the old hulk off East Slough and the free-standing piles in Airport Channel, should be kept as resting sites for birds. Clean-up crews of ecology-minded young people might be enlisted. Possibly driftwood sculpturing could become a project for both children and grownups.

    New billboards should be prohibited and old ones removed.

    Unsightly concrete and masonry rubble seen from Doolittle Drive across Airport Channel should be moved outside the 100-foot shoreline strip and possibly used as a sound barrier and a base for attractive mounding and landscaping (a fence behind it could inconspicuously protect the proposed distribution center). Removal of the rubble would help restore a shoreline remnant of valuable marsh. This shore is important to fishermen as well as to wildlife.

15. All utility lines should be placed underground.

Recommendations for Property Outside the Planning Area

Although we recognize the planning limits of this report, we also acknowledge that any planning of this scale and influence must also look beyond the immediate boundaries of the Planning Area. (See Plate 7.)

1. Additional land outside the Planning Area should be considered for inclusion in a San Leandro Bay park. At least the following areas should be considered:

   Area A. EBMUD land west of the railroad spur.

   Area B. Private property on the point of land adjacent to East Slough and the Tidal Canal. (Contains valuable marsh and would provide trail continuity.)

   Area C. PG&E property toward the mouth of East Slough. (Marsh; trail continuity.)

   Area D. Private land in Alameda between Eastshore Drive and Aeolian Yacht Club.

   Area E. Alameda garbage dump. (The ultimate height and configuration of fill should be predetermined for aesthetics and use.)

   Area F. The diked area east of the Alameda dump. (This should be maintained with minimal change as a bird sanctuary.)

   Area G. The marsh on the Airport side of Doolittle Drive just south of Area F. (If pollution is eliminated, this can become a significant wildlife refuge area.)

   Area H. The area between Airport Channel and Doolittle Drive between Areas F and I.

   Area I. The area between Airport Channel and the golf driving range off Doolittle Drive.

   Area J. Portions of the large, recently filled Port property south of Arrowhead Marsh.

2. Any extension of Edgewater Drive should be located as far as possible from the existing shoreline.

   In any such extension a properly designed bridge across Damon Slough should be built so as to preserve the valuable marsh at the mouth of the Slough. (Plate 7.)

3. The 66th Avenue freeway interchange area and the Coliseum Complex connection should be improved as an entry to the San Leandro Bay Park.

   This entrance, with its broad view across the water to the Airport and the San Francisco peninsula beyond, presents a major scenic experience.

4. Safe shoreline access should be provided along the Doolittle Drive area.

   A suitable route for through traffic between Hegenberger Road and Alameda should be developed. Separation of local and through traffic would give opportunity for development of safe trails for pedestrians and bicyclists, as well as safe automobile access to vista points and activities along the shoreline.

5. Any BART-Oakland Airport extension or connector line adjacent to the San Leandro Bay Planning Area should conform to the GOALS and GUIDELINES of this chapter.

   The precise routing of the line, its design and construction, its visual and acoustical relationship to the park area, and the location of any nearby station should all be planned in close cooperation with the park planning and development.

6. Utility lines should be placed underground in the general vicinity of San Leandro Bay.

Special Recommendations

1. The benefits to the public from recreational use and wildlife protection should be assured permanence by whatever legal and government steps are necessary.

2. The Advisory Group on San Leandro Bay Planning, or its successor, should convene periodically (at least annually) to review the implementation of this report.

   The work of this Group, its recommendations, and any future plans should be considered to be part of an ongoing process of planning for San Leandro Bay's continued protection.

   As new demands for other uses are made and as new technology is developed for environmental improvement, these guidelines should be reviewed for relevance and, if appropriate, should be updated.

XII. I M P L E M E N T A T I O N

The unique habitat of San Leandro Bay is severely threatened by the presence of surrounding urban development. Over the years, many sections of marshland and open water have disappeared or changed drastically in character. Other ecologically important areas around the Bay could suffer a similar fate unless prompt and specific action is taken.

The following are the Advisory Group's suggestions for implementation--without which the proposals of this report will be meaningless.

Funding Sources

There are many possible sources for financing park acquisition, development, and maintenance at San Leandro Bay. These include the Port of Oakland, the Cities of Oakland and Alameda, East Bay Municipal Utility District, the East Bay Regional Park District, other local governmental agencies, various state and federal assistance programs, and contributions by private firms, groups, and individuals. (For more detail see Appendix B. POSSIBLE FUNDING SOURCES.)

What may be called for is an implementation "package" involving several different programs and agencies. This approach seems especially appropriate at San Leandro Bay with its complex environment, improvement needs, and ownership pattern. The Port, the two Cities, and EBMUD have immediate responsibilities, and should have a major part in implementing the park.

Because of the regional importance of a San Leandro Bay park, it may be appropriate for the East Bay Regional Park District to have a leading role in developing it. The Regional Park District has often worked with other agencies in this kind of "package" approach. On at least one recent park project, it has combined its own tax money with federal grants under both the Land and Water Conservation Program and the Open Space Land Program. Similarly, it has acquired some of its park lands in fee, but leased others from various governmental bodies.

Local resources could be augmented through a judicious choice of federal and state programs. For example, if the state participated under the Wildlife Restoration Fund Program, its expenditures could be used as the "local share" under some federal matching programs.

It would be especially helpful if the Port and other public and private property owners could donate the necessary land for the park. If the land is provided in fee, its value can in many situations be counted toward the "local share" under various matching programs. If the land is merely provided under an ordinary lease, its value generally cannot be counted. (Perhaps some in-between arrangement might qualify, such

as a lease combined with a permanent scenic easement or an in-fee transfer with certain residual rights for the donating agency. These possibilities should be explored.)

Progress So Far

1. San Leandro Bay Park Refuge, adjacent to the Municipal Service Center, is already under construction. This first segment of shoreline is being developed as a park by the City, which has applied for Open Space Land Program assistance on the project. Completion is expected around June 1972.

2. A basic construction contract will probably be awarded sometime this spring for the joint Corps of Engineers - Flood Control District project on San Leandro Creek, to be followed by a landscaping contract later in 1972. This will provide for creekside trails which could link with a future Bay park.

3. While seeking passage of its recently approved property tax increase, and as a basis and guideline for it, The Regional Park District approved a preliminary priority list. First priority was given to acquisition and development of shoreline parks, including one at San Leandro Bay.

4. The East Bay Regional Park District has retained consultants to prepare a District-wide master plan, to be completed in about a year. This will include recommendations on San Leandro Bay.

5. In December 1971 the Oakland City Council adopted a resolution (51979 C.M.S.) urging in part that the Regional Park District "proceed promptly with development of a major new park and wildlife refuge on the San Leandro Bay shoreline in cooperation with the City of Oakland and the Port of Oakland...." In January a well-publicized luncheon meeting--involving Port, City, and District officials and citizens--was held to discuss the proposal.

6. The Regional Park District has reaffirmed its strong interest in a park at San Leandro Bay. There remain, though, unresolved questions, including the terms for land donation or purchase. To facilitate top-level discussion of such issues, a policy committee has been formed including representatives from the Cities of Oakland and Alameda, the Port, and the Regional Park District.

The Next Steps

1. This report should be widely distributed and comments invited. In its Resolution No. 20659, which officially recognized the Advisory Group, the Board of Port Commissioners stated that "members of the

general public will be given ample opportunity to examine and comment on the proposals as submitted." The Board should hold public hearings and then approve the report with whatever changes may appear appropriate as a result of the hearings.

2. The Port, the Cities of Oakland and Alameda, EBMUD, the Regional Park District, and other appropriate agencies should adopt resolutions stating their expected roles. These might be like the advance "resolutions of intent" which the Regional Park District has adopted for other projects. The resolutions should provide for the donation of lands and easements necessary for San Leandro Bay park development. Similar commitments should be sought from private property owners.

3. Representatives of the major affected agencies should immediately prepare a rough cost estimate for a San Leandro Bay park, as well as a suggested schedule of actions. The cost estimate and schedule should be available in time for the hearings on this report.

4. An ongoing informational program should be undertaken to acquaint the general public with the opportunities available at San Leandro Bay. Service clubs, business groups, and community organizations could be very helpful in getting the information out and involving other organizations, as well as in soliciting contributions for the park itself.

5. A detailed development plan should be prepared under the direction of the agency agreeing to take the primary role in park development, in consultation with the other agencies involved. This will allow firm cost estimates to be made and applications for financial assistance to be submitted. A development schedule should be prepared at the same time.

6. Some of the necessary development may have to be phased over a number of years. However, interim improvements like clean-up, tree planting, erosion control, trail construction, and opening for public use should begin immediately.

7. Even though funds for total development are not immediately available, lands suitable for inclusion in the park should be acquired, leased, or otherwise reserved as soon as possible.

I L L U S T R A T I O N S

San Leandro Bay

0 500 1000 2000 3000

Marshes and Sloughs, 1917

Plate 1

San Leandro Bay

0 500 1000 2000 3000

Minus Tide, 1968

Plate 2

San Leandro Bay

0 500 1000 2000 3000

Low Tide, 1971

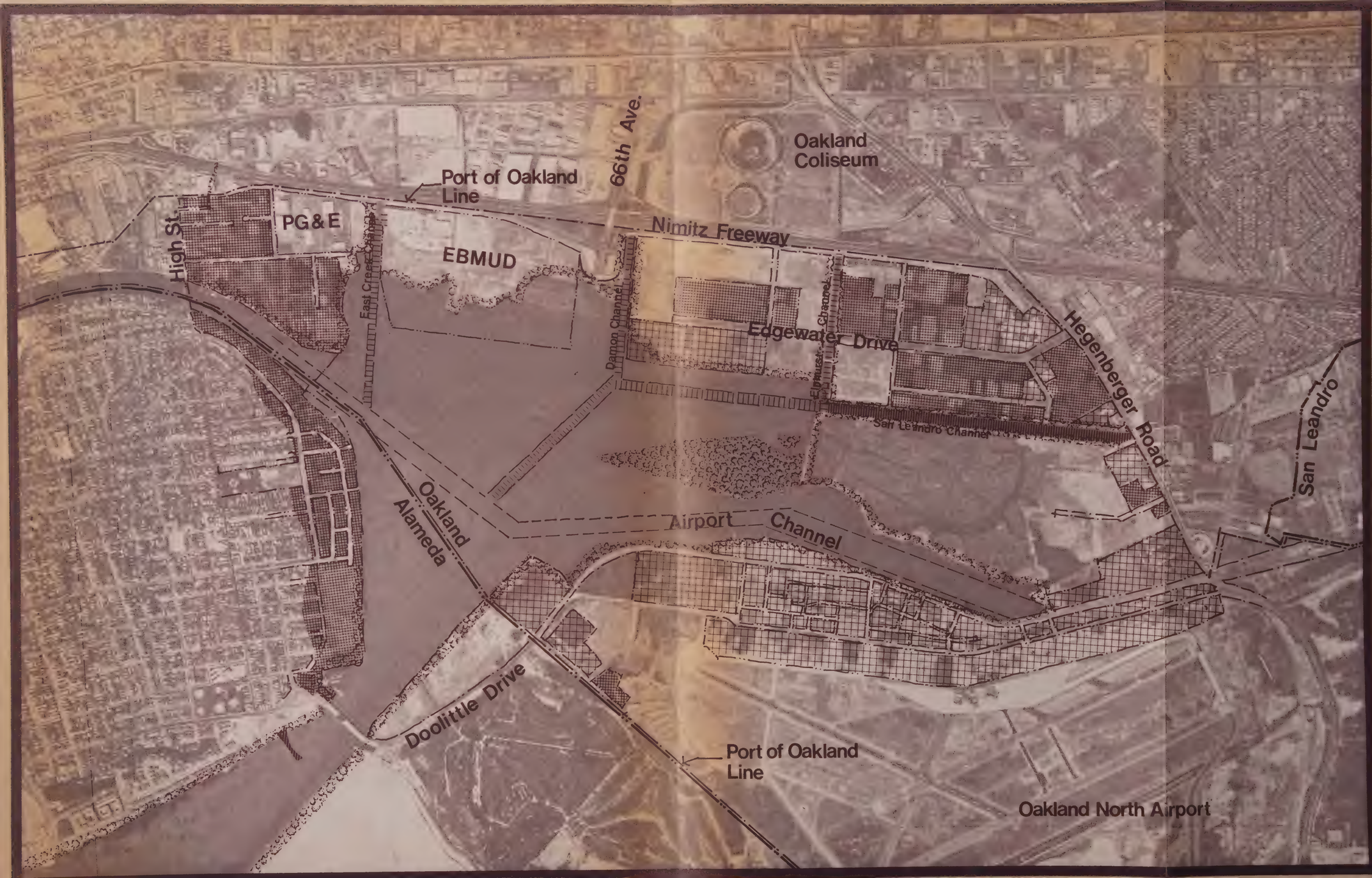
Plate 3

San Leandro Bay

0 500 1000 2000 3000

High Tide, 1970

Plate 4



San Leandro Bay

0 500 1000 2000 3000

Legend:

OWERSHIP & CONTROL

- Port Area Line
- Port of Oakland Leased
- Privately Owned
- BCDC Jurisdiction

PROPOSED DREDGING:

- Corps of Engineers
- Alameda County F.C.D.
- Uncertain

Ownership and Jurisdiction

Plate 5

San Leandro Bay

0 500 1000 2000 3000

Legend:

Wildfowl Flight Patterns

Marshes (established and incipient)

Marshes and Birds

Plate 6

San Leandro Bay

0 500 1000 2000 3000

Legend:

- Public access or wildlife refuge within planning area
- Potential public access or wildlife refuge outside planning area
- Possible parking area
- Nature education facilities
- Trails
- Scenic Drive
- Suggested road extensions
- (A) Area designation in recommendations

Recommended Uses

Plate 7

APPENDICES

A. BOARD OF PORT COMMISSIONERS' RESOLUTION 20659

WHEREAS, the Port of Oakland exercises jursidiction over most of the land and water areas in and around San Leandro Bay; and

WHEREAS, interest has been expressed by numerous individual citizens, civic organizations, and public agencies in the future of San Leandro Bay; and

WHEREAS, the Board of Port Commissioners supports public recreational use and wildlife protection compatible and consistent with the legal obligation of the Board to make provision for the needs of commerce, shipping and navigation of the Port of Oakland including San Leandro Bay; and

WHEREAS, the Board of Port Commissioners wishes to further its duty to establish sound planning principles and policies to guide the future development of San Leandro Bay area; and

WHEREAS, community contribution to evolving such principles and policies continues to be both desirable and beneficial; and

WHEREAS, the private individuals and representatives of community and governmental organizations named on the attached list have been working with the Port as an informal advisory group, and have expressed a willingness to continue to serve as members of an ADVISORY GROUP ON SAN LEANDRO BAY PLANNING; and

WHEREAS, the Port of Oakland shall develop and use the property within the Port Area for any purpose in conformity with the General Plan of the City which plan provides for major park and recreational areas adjacent to San Leandro Bay; now therefore, be it

RESOLVED that the Board of Port Commissioners of the City of Oakland hereby designates as the "San Leandro Bay Planning Area" all the land and water areas of San Leandro Bay which are subject to its jurisdiction and control as well as to the jurisdiction of the San Francisco Bay Conservation and Development Commission as set forth in the February 1, 1971, Joint Declaration between the City of Oakland, Port of Oakland, and the San Francisco Bay Conservation and Development Commission; and be it

FURTHER RESOLVED that the Board of Port Commissioners of the City of Oakland hereby authorizes the establishment of an ADVISORY GROUP ON SAN LEANDRO BAY PLANNING to advise the Executive Director and members of his staff in connection with developing clear proposals for the use of such water and land in the "San Leandro Bay Planning Area"; and be it

FURTHER RESOLVED that the ADVISORY GROUP ON SAN LEANDRO BAY PLANNING is urged to consider and make recommendations on means for implementing their proposals; and be it

FURTHER RESOLVED that the ADVISORY GROUP ON SAN LEANDRO BAY PLANNING be composed of those persons and their designated organizations named on the attached list, and that an alternate may appear in place of a member of the ADVISORY GROUP ON SAN LEANDRO BAY PLANNING when authorized by that member; and be it

FURTHER RESOLVED that in preparing recommendations concerning the "San Leandro Bay Planning Area" the Executive Director may seek the advice and assistance of a wide range of citizens including individuals and organizations who are not members of the ADVISORY GROUP ON SAN LEANDRO BAY PLANNING; and be it

FURTHER RESOLVED that the ADVISORY GROUP ON SAN LEANDRO BAY PLANNING, working with the Executive Director, shall periodically submit its findings and recommendations to the Board of Port Commissioners, with a final report to be submitted no later than April 1, 1972; and be it

FURTHER RESOLVED that, prior to any action by the Board of Port Commissioners on material submitted by the ADVISORY GROUP ON SAN LEANDRO BAY PLANNING, members of the general public will be given ample opportunity to examine and comment on the proposals as submitted; and be it

FURTHER RESOLVED that, in support of the concerns expressed in this resolution, the Board of Port Commissioners hereby declares a moratorium on any change of land or water use of the "San Leandro Bay Planning Area", or portions thereof, except as may be jointly agreed upon by the Port and the San Francisco Bay Conservation and Development Commission, until a plan for the "San Leandro Bay Planning Area", or portions thereof, has been adopted by the Board of Port Commissioners and approved by the appropriate agencies. Excepted from this moratorium shall be airport and distribution terminal access improvements which may cross over or through portions of the "San Leandro Bay Planning Area" and may be required prior to adoption of a plan for said area.

Adopted November 10, 1971

B. POSSIBLE FUNDING SOURCES*

Agency	Program of Fund	Eligible Activities	Conditions or Comments
Port of Oakland	Donation of land	(Land acquisitions for parks and accessways)	Terms of donations could affect whether it can be counted as "local share" under other programs
Port of Oakland	General revenues	Planning, development, and maintenance of parks and accessways	There may be limits on how much the Port can do.
City of Oakland	Gas Tax Fund	Planning, acquisition, development, and maintenance of streets (and incidental bikeways and walkways)	
City of Oakland	Donation of land	(Land acqusition for parks and accessways)	City has already provided land for its shoreline park adjacent to the Municipal Service Center.
City of Alameda	Donation of land	(Land acquisition for parks and accessways)	
City of Alameda	Miscellaneous	Planning, development, and maintenance of parks and accessways	
East Bay Municipal Utility District	Donation of land	(Land acquisition for parks and accessways)	

* This table is a tentative, and not necessarily exhaustive, listing.

Agency	Program of Funds	Eligible Activities	Conditions or Comments
East Bay Municipal Utility District	General revenues	Planning, development, and maintenance of parks	
East Bay Regional Park District	Property taxes	Planning, acquisition, development, and maintenance of parks	EBRPD has recently secured increase.
East Bay Regional Park District	Inter-County Parks Foundation	Acquisition and development of parks	This is a memorial fund arrangement for tax-free contributions.
P. G. & E. and private land owners	Donation of land	(Land acquisition for parks and accessways)	
P. G. & E. and private land owners	Miscellaneous	Landscaping of their own facilities	
Alameda County Flood Control & Water Conservation District	Property taxes	Planning, acquisition, development, and maintenance of flood control improvements and incidental recreation facilities and landscaping; dredging of outflow channels	
U.S. Dept. of the Interior, Bureau of Outdoor Recreation (BOR)	Land and Water Conservation Fund	Planning, acquisition, and development of outdoor recreation areas and trails	Grants may reimburse up to 50% of project cost. Must be cleared through ABAG and go through State Parks and Recreation Department. Region-serving facilities are emphasized.

Agency	Program of Funds	Eligible Activities	Conditions or Comments
U. S. Dept. of Housing & Urban Development (HUD)	Open Space Land	Planning, acquisition, and development of parks and other open spaces; also beautification of streets and other publicly controlled property	Grants may reimburse local agency for (usually) up to 50% of project cost. Major construction such as marina is ineligible.
U. S. Dept. of Housing & Urban Development (HUD)	Comprehensive Planning Assistance (701) Program	General or Development Planning	Must be cleared through ABAG
State Wildlife Conservation Board & Dept. of Fish & Game	Wildlife Restoration Fund	Planning, development, and (apparently) acquisition and management of wildlife areas	The State Dept. of Fish and Game would have to develop the wildlife area itself, though it could turn it over to a local agency to operate. It could probably encourage the local agency to do some part of an over-all development, perhaps the nonwildlife aspects.
U. S. Dept. of the Interior, Bureau of Sport Fisheries & Wildlife	Wildlife Restoration Program	Planning, acquisition, development, and (possibly) management of wildlife areas	Grants may reimburse for up to 75% of project cost. Assistance is given only to State Fish and Game departments.
U. S. Army Corps of Engineers	Small flood control projects	Flood control projects and incidental recreation facilities and landscaping	Local agencies must pay for aspects of the project. Total federal share is limited to $1,000,000.

Agency	Program or Fund	Eligible Activities	Conditions or Comments
U. S. Dept. of Transportation	Traffic Operations Projects to improve Capacity & Safety (TOPICS)	Planning and development on projects to increase safety and capacity of streets	Grants normally cover up to 50% of project cost. May be used for bikeway or pedestrian ways, but must be within street right-of-way.
State Division of Highways	Miscellaneous	Planning, acquisition, development, and maintenance of improved Doolittle Dr.	Doolittle Drive is currently a state highway.
Alameda-Contra Costa (A/C) Transit District and Bay Area Rapid Transit District (BART)	Property taxes and fares	Improved transit access	
Various nurserymen	Contributions	Trees	Oakland City Councilman Frank Ogawa has obtained nurserymen's pledges to contribute 1,000 full-grown trees.
Nature Conservancy	Revolving fund	Preliminary acquisition and (sometimes) management of strategic natural areas	The Conservancy emphasizes "fast buying" of threatened land and tries to resell to public agencies when they get their appropriations.

Agency	Program or Fund	Eligible Activities	Conditions or Comments
Other private foundations, groups, and individuals (Audubon Society, etc.)	Miscellaneous	(Varies)	Possibly groups such as Kiwanis and Chambers of Commerce could help solicit contributions.
Park users and concessions	User fees and concessionaire revenues	Maintenance of parks	Depends on appropriateness to the kind of park envisioned here.

C. D R E D G I N G

Scope

Dredging in San Leandro Bay should be limited to that needed for flood-control or other approved, planned purposes which would not have long-lasting adverse effects on the aquatic environment.

To maintain outfall discharge capacities, dredging of materials deposited from siltation is necessary. Flood discharges are almost always accompanied by solid matter transport and consequent siltation where stream velocities decrease, such as Bay outlets. If dredging were not done, the outfall capacities of San Leandro Bay would become restricted and the drainage facilities constructed upstream of the Bay (mostly in populated areas) would become less effective. The consequences would be sporadic flooding of residential areas adjacent to the control channels.

The frequency and magnitude of dredging needed for flood control have not been accurately determined. On the basis of experience with other major outfall channels in Alameda County, it is estimated that maintenance dredging may have to be done every 4 to 5 years.

Every effort should be made to minimize the frequency of maintenance dredging. To this end, flood control channels should be engineered (channel sections, and bottom grades and elevations should be determined), and the influence of siltation on the hydraulic performance of the channels should be studied.

Methods

Methods of dredging should be selected so as to minimize the total turbidity created and the total amounts of solids put into suspension. The turbidity created and the solids suspended result both from the actual removal of materials and from the discharge of dredging effluent back into the Bay.

Dredging equipment and operations should be such that there will be no further Bay pollution from fuels, oils, or other harmful materials originating from the equipment and its operation.

Dredging methods and their conduct should comply with all applicable federal, state, county, and municipal laws concerning pollution of lakes, streams, and bays. Work should be accomplished when the effect on the area will be least damaging. It may be more beneficial to dredge during the winter when the turbidity is greatest and the effect of dredging may have the least influence on the Bay ecology.

Disposal of Dredge Spoils

It is expected that the concentration of volatile solids, nitrogen, mercury, lead, zinc, and other deleterious substances in Bay mud, and possibly flood-originating silts and clays, will preclude the disposition of spoils in the Bay or on adjacent mudflats. Chemical tests should be conducted, however, on samples of flood-deposited silts just before dredging operations, so as to aid in planning disposition of dredge spoils.

First priority should be given to the disposal of dredged spoils around San Leandro Bay, where earth fill may be necessary for land development, such as construction of sound-proofing berms, provided that the criteria mentioned in the previous paragraph can be satisfied.

Contaminated dredge spoils should preferably be disposed of on land, particularly in areas already earmarked for construction and areas where the spoils will be permanently confined in such a manner as not to pollute the Bay or inland aquifers through seepage or leaching.

Spoils which cannot be disposed of in the immediate vicinity of San Leandro Bay must be disposed of in areas, inland or offshore, approved by federal, state, county, and municipal authorities in order of importance.

D. WATER POLLUTION

Water Quality in San Leandro Bay

Each day there is a large interchange of water between San Francisco Bay and San Leandro Bay. The water surface areas range from approximately 600 acres at the highest tides to as little as 100 acres at the lowest tides. The water quality of San Leandro Bay is considered to be comparable to that of waters of the south central areas of San Francisco Bay.

Sources of potential pollution in San Leandro Bay are:

1. Storm water runoff from Damon Slough, East Creek Slough, Elmhurst Channel, San Leandro Creek, and the Oakland North Airport.

2. Seepage from the Alameda dump.

3. Overflows occurring at EBMUD's South Intercepter into the Elmhurst Channel, which during periods of heavy rainfall discharges untreated sewage into the Bay. These overflows occur approximately 11 or 12 times during normal wet years.

Water Quality Objectives

Objectives for San Francisco Bay are set by the California Regional Water Quality Control Board. Controllable water quality factors are considered to be any human activity or natural occurrence which directly or indirectly affects water quality and can be regulated. Factors considered include color, turbidity, bottom deposits, floating material, oil or other materials of petroleum origin, odor, pesticide residue, hydrogen ion concentration, biostimulants, toxic or other deleterious substances, radioactivity, and temperature.

Three of the variables most likely to be affected by the pollution sources of San Leandro Bay would be dissolved oxygen, floatable materials, and total coliform bacteria. Few data exist concerning quality of waters within the Oakland Inner Harbor and San Leandro Bay. It is presumed, however, that these waters might not always meet the water quality objectives for coliform bacteria and floatable materials. Samples taken in April 1969, however, showed that at the Bay Farm Island Bridge at the mouth of San Leandro Bay dissolved oxygen levels were quite high, averaging 9.4 mg/liter; this is well above the water quality objectives.

Current Plans

Steps taken to improve water quality in San Leandro Bay include the following:

1. The Regional Water Quality Control Board staff has indicated plans to take action to require the control of floatables from storm water discharges into the Bay.

2. The RWQCB's staff has indicated intention to require the City of Alameda to control seepage from the Alameda dump.

3. EBMUD is making plans toward the eventual elimination of overflows from the sanitary interceptor sewer into Elmhurst. This work will involve extensive and costly repairs and replacement of major portions of Oakland's sewer system.

E. N O I S E P O L L U T I O N

Environmental Protection Agency Study

Following a year-long study of the effects of noise on people, EPA in December 1971 presented a lengthy report to the President and Congress. A "Summary of Conclusions and Recommendations" based on the report has been issued as Document NCR500.1 and is available from the Government Printing Office for 30¢. The report was supported by a series of Noise - Technical Information Documents (NTID300.1 - 15) which have been sent to libraries, but have not yet (April 1972) been listed for public distribution. This material is available in the Documents Section of the University of California library.

Effects of Noise on People

At least 80,000,000 Americans are affected by noise pollution, the report says. To approximately half of these, noise is a health hazard, the report says. Effects vary from annoyance and disturbance of such activities as sleep and conversation to identifiable symptoms such as nausea, irritability, general anxiety, and changes in mood. Prolonged exposure leads to hearing impairment.

Effects on Wildlife

One of the supporting documents (NTID300.7) says: "The effects that increased noise levels will have on wildlife in these areas (previously considered remote) are virtually unknown, but noise may dramatically affect wildlife, particularly when they rely on their auditory systems for specific life functions."

Developing Hearing Problems

Audiometer tests of 7,000 students in classes from grade school through college showed a uniform pattern of steadily declining hearing acuity. The current generation of young people, the report concluded, will meet more serious hearing problems in their middle years than their parents did.

Decibel Scale

The following decibel scale for sounds ranging from faint to harmful was issued with the report:

0 to 20 decibels - faint (rustling leaves)
to 40 " - Moderate (ordinary conversation)
to 60 " - loud (average traffic)
to 80 " - very loud (cocktail party)
to 100 " - deafening (power mower)
to 120 " - painful (siren)
to 140 " - physical damage (jet take-off)

Desirable Noise Limits

This information, as well as future research, should be studied and applied to all San Leandro Bay planning, design, and construction. Noise levels, particularly those audible to passive park users, should be reduced or intercepted whenever possible. Such control should include appropriate solid barriers, significant earth mounds and berms, and proper placement of buildings.

F. WHAT EATS WHAT IN THE MARINE WORLD

Plankton: The Base of Water Life

Any discussion of the food web must go back, inevitably, to plankton.

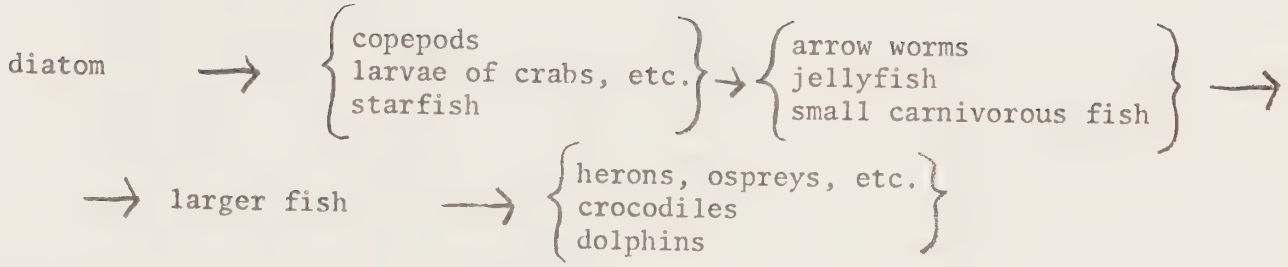
Phytoplankton are tiny floating plants that contain chlorophyll and are able to make their own food from water-borne nutrients, water, and oxygen in the presence of sunlight. Zooplankton are tiny floating animals that feed on phytoplankton and are in turn eaten by larger organisms (as also is phytoplankton). These tiny organisms (often single-celled, often microscopic) are so numerous that they may discolor ocean waters in which they float or make a brownish scum on the rocks in ponds or streams.

Practically every form of aquatic life depends directly or indirectly on plankton: the diatoms, flagellates, copepods, and other minute creatures that swarm in any fertile body of water. We are therefore concerned with maintaining conditions that encourage the growth of plankton.

Food Chains

Most of the more complex organisms feed on something that has fed on plankton, but the whalebone whales (among the largest and most highly organized animals) feed on it directly: They take a mouthful of sea water, squirt it out through their whalebone filters, and swallow what gets stuck there. The somewhat gelatinous mass includes single-celled plankton and more complex but still minute creatures--tiny crustaceans, the larvae of crabs, lobsters, prawns, and barnacles, of sea urchins and brittle stars, of various mollusks. All the small creatures, such as arrow worms, jellyfish, and crustaceans, that feed on smaller plankton are themselves subject to being eaten up by something larger.

A food chain (or food web) usually has about three stages, but may run to five before it reaches its topmost members. Those topmost members, of course, are broken down after death by bacteria and other small organisms; thus the salmon or hawk or whatever is reduced to simple nutrients ready to feed diatoms in the ocean or in the soil and so start the cycle all over again. A typical example may be represented thus:



When bacteria and decay organisms have done their work all is recycled.

The Pyramid of Concentration

The numbers of single-celled organisms needed to support life in crabs, egrets, whales, and all the other higher organisms is almost beyond comprehension. For instance, the diatoms have siliceous (that is, glassy or quartz-like) shells--of great complexity and beauty, by the way. Shells of dead diatoms fall to the bottom of the ocean or pond. Diatomaceous earth is built up of ancient deposits and has been raised above water level, in some places, by motions of the earth's crust. It may occur in beds from a few feet to several thousand feet thick; only one cubic inch of diatomite contains several million discarded shells. Yet these vast beds represent only a small portion of the total diatom population of their day.

When diatoms are eaten by copepods or by larvae of "higher" water life, an astonishingly small amount of their body substance ends up incorporated into the body of the eater. The rest is used to generate heat and energy. The efficiency of zooplankton production from phytoplankton is only 15/1000 of 1%. The efficiency of production at the top of this part of the chain is from 5/100,000 to 25/100,000 of 1%. Think of the unimaginable numbers of diatoms and other single-celled organisms that have to be generated to keep a heron in groceries!

Pollution and the Pyramid

The diatoms keep growing and reproducing by splitting so long as they have water, nutrients, oxygen, and light. But some forms of pollution deprive them of oxygen. Any material in the water--from algal bloom to sewage--that must be disposed of by bacterial action requires oxygen. If the oxygen dissolved in the water is used up by too much such material, there is nothing left to support zooplanktonic growth, and none of the forms of life that depend on zooplankton can be supported. Birds do not feed where there is pollution--the cupboard is bare.

Not only does pollution deprive an environment of dissolved oxygen. Harmful substances, such as toxic elements (many of the "trace elements" are necessary in tiny amounts but poisonous in larger amounts) in compounds leached out of the soil by overirrigation, or man-made poisons such as DDT, wash down into streams and bays. These substances, if ingested by any form of life, are usually retained by that organism and ingested by the next one up the chain. How great a concentration this may ultimately result in! We are told that the total weight of organisms at the bottom of the chain may be as much as 15 times the total of all the more highly organized creatures that depend on the microscopic base. We all know what has been happening to pelicans that have fed on something that ate something that had ingested DDT--they develop high concentrations of DDT in their own tissues, and one effect is that their eggs have shells too thin and weak to protect the life within.

Dependencies in San Leandro Bay

To see what eats what among the birds that feed on products of bay, creek, or marsh we can refer to the accompanying table. It includes those birds in the list of "Birds of San Leandro Bay" that depend ultimately on plankton. Information is taken from Peterson's "Field Guide to Western Birds." The numbers in the table refer to the order in which each item occurs in the listing of the birds' food sources. (The entry "S" means sometimes.) For example, the listing for food of geese is given as "Mainly grasses, seeds, aquatic plants. Brants prefer eel grass. Emperor goose eats shellfish." It doesn't take much study of this table to see how vulnerable our birds are to effects of pollution on plankton, the basis of all aquatic life.

FOOD ITEMS FOR BIRDS OF SAN LEANDRO BAY (see last paragraph of text)

	Plankton	Aquatic Plants	Mollusks, snails, bivalves, cuttlefish	Crustaceans	Worms, other Invertebrates	Aquatic insects, insects	Small aquatic animals	Fish	Tadpoles, frogs	Lizards, reptiles	Mice, other rodents	Carrion, refuse	Seeds, grasses, buds	Other
Loons							2	1						
Grebes				2		4		1	3					their own feathers
Pelicans				2				1						
Cormorants				2				1						
Herons, bitterns				3		S		1	2		S			other aquatic life
Geese		2		S									1	
Ducks (surface)		1				4	3						2	
Ducks (diving)		1	2	2			1							
Rails, coots		1	5	4		2			3				6	
Plovers, etc.						2	1						3	vegetable matter
Snipes, sandpipers			3	2	4	1							5	berries
Avocets				2	1	3								
Phalaropes	1			3	2	4								
Gulls		2	1	1	1	1						3		plant & animal food
Terns			2	2	2	3		1						
Vultures												1		
Owls						5		4		3	1			birds
Kingfishers						2		1		3				

G. B I R D S O F S A N L E A N D R O B A Y
(Seen between July 1970 and June 1971)

Loons Large, long-bodied. Swim low on water. Dive for food. Open water. Winter visitors.

Grebes Expert divers; some sink without diving. Open water. Most are winter visitors (pied-billed nest here).
- Horned Grebe Very white neck; thin, dark bill.
- Eared Grebe Similar to Horned Grebe, but dirtier looking; head more rounded.
- Western Grebe Large; long white neck; yellow bill.
- Pied-Billed Grebe Brown; stocky build; thick bill. Most common in summer and fall.

Brown Pelican Very large; long bill; throat pouch. Adults have whitish head. Dive for fish with bill pointed down. Fast disappearing, victims of pesticides. Most common during summer and fall.

Double-Crested Cormorant Large, blackish; orange-yellow throat pouch. Sits upright on posts. Swims low in water, bill pointing up. Flies close to water. Seen most frequently near tidal canal. Sometimes in Airport Channel. Resident.

Herons Large, long-legged waders. Fly with necks folded, legs trailing. Food: fish, frogs, crayfish, other aquatic life. Seen most frequently in Arrowhead Marsh.
- Great Blue Heron Largest birds of San Leandro Bay area. Stand 4 feet tall and have wing spread of 6 feet. Long neck. Blue-gray with white about head.
- Common Egret Large, white; yellow bill.
- Snowy Egret Smaller than Common; black bill and yellow feet. (There is an egret rookery near Lake Chabot).
- Black-Crowned Night Heron Gray, black on top of head. Juveniles are streaked brown. Hunched position. Flocks fly to feed at dusk.

American Bittern Large brown bird with long green bill and green legs. Hard to see; may stand motionless, with bill pointing up, for long periods. Resident in Erstwhile or other marsh areas. Not common.

Geese Large plump birds with long neck and short legs. Feed on grain, grass sprouts, some marine plants. "Talk" as they fly in flocks.
- Canada Goose Black head and neck. Usually a winter visitor, but they have been breeding locally in recent years. Often seen on Alameda golf course.
- White-Fronted Goose Gray, white face. Occasional visitor.

Surface-Feeding Ducks These ducks feed by upending in shallow water (plants, seeds, grass, small aquatic animals, insects). Marshes and grassy edges of San Leandro Bay, sloughs, and creeks. Large numbers used to be in Erstwhile Marsh. Males only are described; females are less showy.

Mallard Green head, narrow white collar, orange bill and legs. Interbreed with domestic ducks. Nest on ground in grassy areas, often away from water. Resident.

Pintail Breast very white; thin white stripe up side of long neck; long sharp tail. Abundant August - May. Some breed locally.

Green-Winged Teal Small duck. Gray with brown head; vertical white stripe in front of wing and creamy area near tail; green wing patch. September - April.

Cinnamon Teal Small; rusty brown; green speculum. Most common in late spring and early fall. Some nest locally.

American Widgeon (Baldpate) White crown patch; large white patch in rusty sides. September - April.

European Widgeon Like American widgeon, but neck is rusty instead of green. Rare. Several observations offshore from EBMUD property.

Shoveler (Spoonbill) Rufous sides; white breast; dark glossy head; long broad bill; orange legs. Late August - mid-April.

Diving Ducks Winter in protected coastal bays and estuaries. May begin to arrive in late July, but most do not come until winter storms drive them south. Dive for food (small fish, other aquatic animals, plants) and may swim under water. Most numerous in northeastern and eastern part of Bay.

Canvasback Rusty head and neck; white back; black bill. Abundant.

Greater Scaup Black head, chest, and tail; whitish back; blue bill; long white wing stripe.

Lesser Scaup Smaller; similar to greater scaup, but wing stripe shorter. Usually in more sheltered waters. Abundant.

Common Golden-Eye Black head; round white spot before eye; black and white body pattern, yellow eye. Female has brown head and white collar. Often seen in Airport Channel, San Leandro Creek.

Bufflehead Small, mostly white; large white patch at back of greenish head. Open water in all parts of Bay.

White-Winged Scoter Black with white wing patch; bill orange with black knob. Open water.

Surf Scoter Black with white patches on forehead and back of head; bill patterned with orange, black, and white. Open water.

Ruddy Duck Small; white cheeks and stiff perky tail. Abundant.

Red-Breasted Merganser Dark head; crest; long, thin bill; long lightish body.

Hawks Hooked beaks; hooked claws. Vultures feed on dead animals. Other hawks feed on rodents, rabbits, occasionally on small birds and insects.

Turkey Vulture Gray-black; red head. Soars with wings tilted up.
White-Tailed Kite White head, tail, and underparts; black wing patches. Resident, not common. Seen perched on wire near San Leandro Creek and on top of a bush close to Erstwhile Marsh.
Marsh Hawk Long, slightly angled wings. White rump patch. Flies low over marshes and fields. Resident, but most common in winter.
Sparrowhawk Jay-sized; long pointed wings; long rufous tail. Black and white face patterns. Hovers. Perches on wires and posts. Resident.

Ring-Necked Pheasant Male very colorful; scarlet wattles on face; white neck ring; long pointed tail. Female brown, long tail. Resident in grassy areas near Erstwhile Marsh.

Clapper Rail (endangered species) Bird of tidal marshes. Hen-sized, gray-brown with tawny breast; white patch under short, upturned tail; long orange bill. Seen most frequently when high winter tides bring them out of the water. Arrowhead Marsh and Erstwhile Marsh. Some winter on South Shore in Alameda. Resident (?)

American Coot (mud hen) Slate gray with black head and white bill. Common in winter in open water and along shores. Some breed locally. Abundant on Alameda golf course.

Shorebirds Most shorebirds, which feed in the mudflats, leave in the spring for nesting sites as far north as Alaska. They begin to return in late June. Migration peaks are in September and April. Many go farther south, but thousands winter in the San Leandro Bay area. A few nest locally. Shorebirds use mudflats for feeding and other sites for resting between tides.
Semi Palmated Plover Small plump bird with dark brown back; light breast and belly with one black breast ring; yellow legs.
Snowy Plover Small, light gray; black mark at each side of breast; white underparts. Often in sand away from water.
Killdeer Plump plover shape; two black breastbands; noisy; common along shores, in marshes, and in rain pools. Resident.
Black-Bellied Plover Medium-sized chunky gray bird (black belly in breeding plumage); short black bill; big eyes. In flight shows black wingpits and whitish rump and tail. Mudflats.
Ruddy Turnstone "Harlequin" pattern around head and chest; russet back, orange legs; striking flight pattern. Feeds on mudflats, especially where there are algae-covered rocks or clods to turn. Most common in March to May and August to October.
Black Turnstone Blackish head, chest, back; white lower breast and belly. Conspicuous flight pattern. Same habitat as Ruddy Turnstone. Winter visitors.
Long-Billed Curlew Large, brown, long-legged wader. Very long bill curving down. Mudflats for feeding.
Whimbrel Similar to long-billed curlew, but slightly smaller and has shorter bill.

Willet Large, long-legged wader. Plain gray, but in flight shows black and white wing pattern. Often rests in marshes. Some nest locally.

Greater Yellowlegs Looks much like willet except that legs are bright yellow. Often seen along edges of creeks, sometimes in rain pools.

Lesser Yellowlegs Same as above, but much smaller--size of killdeer.

Sandpipers (Peeps) Sparrow-sized birds that fly in large flocks between mudflat feeding grounds and upland resting areas, where they huddle so close as to resemble bark on a tree. They wheel and turn, catching light spectacularly, as they move along the shore. Winter visitors.

Pectoral Sandpiper One of larger sandpipers; heavy breast streaking clearly separated from white belly. Rare in fall migration.

Least Sandpiper Very small, brown; yellow legs. Prefers marshes, green shoreward stretches along estuaries, shoreward edges of mudflats, sometimes rainpools; likes riprap when algae-covered.

Dunlin Largest of sandpipers. Warm brown back, dusky breast, black belly in late spring; long bill drooped at tip.

Western Sandpiper Gray-brown, white belly; first to arrive from northern nesting grounds (late June).

Short-Billed Dowitcher Medium-sized, snipelike shorebird. Gray; white streak along lower back and rump shows in flight. Long bill probes with sewing-machine motion. Common on all tidal flats, especially during peaks of migration.

Long-Billed Dowitcher Like short-billed, but bill is extremely long. Seems to like less salty water. Both species on mudflats of San Leandro Bay.

Marbled Godwit Large brown wader. Resembles long-billed curlew, but long bill is straight, pinkish toward base.

American Avocet Large, conspicuous black and white wader; throat and neck tawny during breeding season. Nests on Oakland Airport. Feeds in shallow water; rests only where it can stand in water.

Black-Necked Stilt Thin, long red legs and thin neck; black above, white below; long, thin bill. In flight legs trail behind tail. Comes north in late March to nest. Noisy in protecting young.

Northern Phalarope Small, gull-like; spin as they feed in shallow pools and streams. Migratory. Late spring and early fall.

Gulls Long-winged, web-footed. Powerful in flight. Some here all year, but most leave during breeding season. Eat about anything; chiefly scavenger birds. Gather at garbage dumps, ponds, any open areas. Juveniles are nondescript in appearance.

Glaucous-Winged Large; the only gull without black wing tips.

Western Very dark back and wings; flesh-colored legs; yellow bill with red spot on lower mandible. Most common gull in summer.

Herring Pearly gray mantle; pink legs; bill like Western's; light brown eye.

California Medium-gray mantle; greenish legs; yellow bill with red or red and black spot on lower mandible.

Ring-Billed Gull Similar to California gull, but smaller; black ring around bill; yellow-green legs.

Mew Gull Smaller, but similar to ring-billed. Short, unmarked greenish yellow bill; greenish legs.

Bonaparte's Gull Very small gull. White on fore edge of wing; round black spot behind eye. Red legs. Dives like a tern.

Terns Slender birds with long narrow wings, forked tails, pointed bills. Dives from air. Forster's here all year; others migratory.

Forster's Tern Most common tern, especially numerous from late March through October. Light gray; black crown; orange bill with black tip; deeply forked tail.

Common Tern Pale gray; black crown; orange-red bill with red tip. In summer darkish horizontal stripe along wing.

Least Tern (endangered species) Smaller than a robin. Gray with white forehead enclosed by black; yellow bill tipped with black; yellow feet. Quick wing beat; much hovering. Feeds in streams in marsh or in streams formed by incoming tide, barely touching water as it takes small fish. Colonies of nesting terns in sand. Late April - early September.

Elegant Tern Slightly smaller than Caspian. Slender yellow-orange bill. Numbers have been increasing. Late July through September.

Caspian Tern Large tern with heavy red bill. Late March - October.

Rock Dove Escaped domestic pigeon. Flocks in open areas.

Mourning Dove Slim neck; pointed tail with white margins. Perches on wires.

Owls Silent birds of prey usually feeding at night on rodents, birds, fish, large insects.

Barn Owl White heart-shaped face; no ear tufts; has nested on Alameda dump. Resident.

Burrowing Owl Small, brown, round head; long legs; stubby tail. Seen during day outside burrows. Resident; can be expected where there are rabbits.

Short-Eared Owl Crow-sized with wing spread of 41"; streaked brown. Often flies in day. Were common in Erstwhile Marsh; may be in Arrowhead Marsh. Late September - mid-April.

Belted Kingfisher Larger than jay; big head, white collar. Rattling call. Dives for fish. Resident. Seen on wires.

Say's Phoebe Large, sparrow-sized. A flycatcher with rusty belly, black tail. Winter visitor.

Horned Lark Sparrow-sized. Brown back, light underparts; conspicuous black and yellow face pattern. Bare fields or very short grass.

Swallows Long pointed wings. Graceful flight. Eat insects. Nest in colonies.

Barn Swallow Blue-black back, buffy breast, deeply forked tail. Fly close to ground. Open mud-cup nest, often under bridges. Mid-March to early October.

Cliff Swallow Square tail, buffy rump. Often seen in mudflats gathering mud for gourdlike nests under eaves of buildings Mid-March through September.

Water Pipit Sparrow-sized; slender bill; white outer tail feathers; bobs tail. Winter visitor, September through May, along beaches and in open fields and lawns.

Loggerhead Shrike Gray with black wings and tail; black mask through eye; white patch on wings. Seen on lookout places--wires, poles, tops of bushes--where it hunts for insects and small animals. Resident.

Mockingbird Slender, gray, robin-sized; white wing patches and outer tail feathers; long tail. Resident. In gardens along Alameda shore.

House Sparrow Male has black throat. Seed eater. All grassy areas, especially near buildings.

Western Meadowlark Robin-sized brown bird with short tail and white outer tail feathers. Black V on yellow breast. Open fields. Resident.

Red-Winged Blackbird Male is black with red "epaulets"; female is streaked brown. Marsh areas, open fields, edges of water. Resident.

Brewer's Blackbird Male glossy black with yellow eyes; female grayish brown, brown eyes. Flocks in open country and along shores. Resident.

House Finch Sparrow-sized, streaked brown with reddish breast and rump (male). Good singer. Common where weed seeds are plentiful. Resident.

American Goldfinch Olive yellow, becoming brown in winter; blackish wings with wing bars; white patch near rump. Undulating flight. Common where weeds are seeding. Resident.

Lesser Goldfinch Very small bird with black cap, greenish back, bright yellow underparts. Seed eater. Resident.

Sparrows Small birds with short, stout bills. Seed eaters.

Savannah Sparrow Streaked brown with yellowish stripe over eye and yellowish cast on throat; pinkish legs. Marsh areas; resident.

White-Crowned Sparrow Clear gray breast; black and white striped crown; bill pinkish or yellowish. Chiefly winter visitors in brushy areas.

Lincoln's Sparrow Small; buffy breast finely streaked with brownish black clearly defined from light belly. Uncommon marsh bird. Resident.

Song Sparrow Streaked breast with central spot. Resident near marsh areas or waterways.

H. ANNUAL BIRD COUNTS OF 1972 AND 1971

National Audubon Society members throughout the United States participate in an annual bird count on a day designated by the local group during a two-week period ending in early January. To avoid duplication caused by the movement of birds between feeding grounds and between-tides resting places, the count of birds in San Leandro Bay is part of the Alameda count. The area also includes Oakland Airport and Bay Farm Island. Participants are experienced observers familiar with the area; they are equipped with binoculars and telescopes. Tide conditions were especially favorable in 1972.

Count Results

1972: 73 species; 7,113 individual birds.
1971: 80 species, 14,551 individuals.

Loons and grebes. Sharp decrease (oil spill?). Pied-billed grebes nested in Erstwhile Marsh and were abundant in channels last summer. Only 3 reported on Count Day.
Cormorants. 23 this year; 56 last year.
Herons and egrets. 52 this year; 95 last year.
Ducks. No significant change. 1972: 15 species; 2234 individuals. 1971: 15 species; 2,652 individuals.
Shorebirds. Increase, probably because of more favorable tide conditions on Count Day. 1972: 16 species; 3,642 individuals. 1971: 15 species; 1,799 individuals.
Gulls and Terns. 1972: 6 species; 481 individuals. 1971: 8 species; 2,881 individuals. This year's count is not considered accurate; larger numbers of gulls were seen shortly before and shortly after Count Day. Gulls move over a broad area.

Not reported on Count Day 1972, but known to be in the area: Belted kingfisher; mew and California gulls.
Not reported on Count Day 1971, but known to be in the area: Green-winged and cinnamon teal, red-tailed hawk.

Reported in 1971; missing in 1972: Common and Arctic loons (oil spill?); American bittern, marsh hawk, Lincoln's sparrow, short-eared owl, loggerhead shrike (loss of habitat in Erstwhile Marsh); long-billed dowitcher, common snipe (dry winter?).

New in 1972: Redhead duck, ruddy turnstone, spotted sandpiper.

Areas of greatest concentration of shorebirds

Low-tide feeding areas: Alameda South Shore (most used); all mudflats.
High-tide resting sites: Diked area near Alameda dump (except for Airport ponds avocets rest here almost exclusively); new fill in Erstwhile Marsh (gulls and terns also); Damon Marsh; EBMUD property near shoreline.

Flight Routes Between Feeding and Resting Grounds

From Alameda South Shore small shorebirds fly to Bay Farm Island. Larger birds fly to the diked area off Doolittle Drive or to the new fill in Erstwhile Marsh.

From mudflats off Arrowhead Marsh shorebirds (egrets and herons also) return to Arrowhead Marsh, to Erstwhile Marsh (when high tides cover Arrowhead Marsh as they did on Count Day), or to the Doolittle diked area.

From mudflats off Alameda East Shore shorebirds fly to the diked area on Doolittle or to Erstwhile Marsh.

From mudflats on the Nimitz Freeway side of the Bay birds fly to Damon Marsh or to EBMUD property.

Endangered Species

Clapper rails wintered on the Alameda South Shore and in Arrowhead Marsh.
Marsh song sparrows remained along San Leandro Creek and at the south edge of Arrowhead Marsh.
Nothing is known about the possible California black rail, a bird very seldom seen.
Only the Forster's tern (not endangered) is here in the winter. Least terns were seen last summer in the remaining channels of Erstwhile Marsh, but possible nesting sites no longer exist in that area.

No brown pelicans were recorded on Count Day in the San Leandro Bay area.

J. PROPOSED SEAPLANE BASE

Application was made last fall for the use of San Leandro Bay as a seaplane base. The applicant proposed a base on the south shore of Airport Channel. The plan contemplated the operation of two 6-passenger seaplanes for the purposes of air rescue, sightseeing, and pilot training. The takeoff pattern would cut across the southwestern part of San Leandro Bay before clearing Bay Farm Island Bridge. Three landing areas, depending upon the stage of tides, were proposed--along the east side of Airport Channel, adjacent to the Service Center, and from the north tip of Arrowhead Marsh extending toward Bay Farm Island Bridge.

Including takeoffs and landings, the three planes would account for a maximum of about 36 daily passes over San Leandro Bay. The applicant said that the only deterimental effect the planes would have on the area would be noise pollution; the noise, however, would be 40% lower than that of helicopters flying directly over the Bay. The noise would be small compared with that already prevailing with the constant use of Oakland's North Airport Runway 27R.

The Federal Aviation Administration, in an analysis study dated 28 January, 1972, concluded that such a seaplane base would be detrimental to air space safety and denied the base establishment. Objections had been presented by the following:

1. Safety Chairman for the Air Line Pilots Association in the San Francisco Bay area. He felt that the base would be acceptable only if it could be positively controlled by Oakland Airport air traffic facilities.

2. Air Transport Association. Apparent conflict with the Oakland International Airport, and resulting hazards.

3. California Division of Highways. The high tide landing area would be perpendicular to and about 1800 feet east of Bay Farm Island Bridge. When the draw span is in the raised position, it extends 60 feet above the normal approach slope.

The FAA study reported further objections from a standpoint of air utilization. In fiscal 1971 75% of the total of 373,386 operations on Oakland Airport were handled on North Field runways. The North Field complex is about 1,000 feet from the proposed seaplane base. Three of the Oakland Airport traffic patterns overlie the proposed seaplane site; a potential collision hazard would be created.

A significant number of helicopter operations along Nimitz Freeway are in the immediate vicinity of San Leandro Bay. Nearly all flights cross the proposed sealanes at altitudes below 300 feet. These

helicopter routes would be difficult to adjust because of the need to separate them from fixed-wing aircraft patterns.

Complications would result from the lack of reliable communications with seaplanes on or near the surface; planes would be operating in areas not visible from the present control tower. Even from the new auxiliary recently opened on the North Field, flight shortly after takeoff and just before landing could not be seen.

The conclusion was that the proposed seaplane base "would adversely and substantially affect the safe use of the airspace by aircraft."

In the FAA analysis no report was made of bird hazards. Flight routes used by birds that feed on the south shore of Alameda are predominantly over the channel beneath Bay Farm Island Bridge. Gulls seem regularly to fly from west Alameda to the Alameda dump in the morning and return in the opposite direction late in the day.

Since last July counts of shorebirds have been made for the State Department of Fish and Game on the Alameda South Shore. The count does not include ducks, gulls, terns, and other birds that use the area. The lowest count (during a period of 2 to 2 1/2 hours) was about 1200; the highest count was 12,762. The average was about 4,500. Counts were made twice a month.

K. PROPOSED CREW RACING

The following proposal for crew racing on San Leandro Bay was made by the Lake Merritt Rowing Club and the coach of the University of California varsity crew:

Requirements for Course

2,000 meters in length in a straight line (approximately 1 1/4 mi.)
100 extra meters at finish
500 feet wide
10 feet dredged below low water

Location

Straight out from San Leandro Creek to the Tidal Canal

By Whom to be Used

1. Colleges - University of California, St. Mary's, Mills, Peralta
2. High Schools--Oakland High, Skyline High, Piedmont High
3. Lake Merritt Rowing Club
4. Participants in other water sports (?)

Contemplated Use

	When	Participants	Spectators
1.	Six Fridays, 3 to 6 p.m., April and May; races bet. Oakland & Piedmont High Schools	80	250
2.	Four Saturdays, 9 a.m. to 12 noon, April & May, races bet. college crews (Washington, California, USC, UCLA, Stanford, Santa Clara, St. Mary's)	125	2,000
3.	Two days once in 3 yrs., Women's Regatta, Nat'l. Women's Rowing Assn.	450	500
4.	One Saturday each 3 yrs., college crews from 23 colleges, 15 races, 9 a.m. to 4 p.m.	700	10,000

When	Participants	Spectators
5. Five days a week, Oakland area high schools, practice 3 to 6 p.m., Feb. 1 to June 1	200	None
6. Six days a week, Mills, St. Mary's, Peralta Colleges (Merritt, Laney, Alameda, Grove Street); at times not in conflict with high schools, Oct. 1 to June 1	35	None